

GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

*Reppy file
asked
add*

PROJECT INITIATION

Date: July 11, 1973

Project Title: Future Capital Requirements of Domestic Mineral Equipment Manufacturers

Project No.: A-1555

Project Director: Dr. John E. Husted

Sponsor: Department of the Interior, Bureau of Mines

Effective: June 22, 1973 Estimated to run until: August 22, 1974

Type Agreement: Contract H0232066 Amount: \$ 23,989

REPORTS: Monthly Financial Report, Quarterly Technical Report, Final Report

SPONSOR CONTACT: Technical Officer
James Paone
Office of Mineral Supply
4015 Wilson Boulevard
Tower No. 3
Arlington, Virginia 22203

*note probably report w/ monthly reviews
write off for former.*

Assigned to: Technology Applications Group ~~Division~~

COPIES TO:

Project Director	Photographic Laboratory
Director	Security, Property, Reports Coordinator
Assistant Director	EES Accounting
GTRI	EES Supply Services
Division Chief(s)	Library
Service Groups	Rich Electronic Computer Center
Patent Coordinator	Project File
	Other _____

GEORGIA INSTITUTE OF TECHNOLOGY
ENGINEERING EXPERIMENT STATION

PROJECT TERMINATION

B
Post
2/5/76
OHL

Date: February 5, 1976

Project Title: Future Capital Requirements of Domestic Mineral Equipment Manufacturers

Project No: A-1555

Project Director: Dr. J. E. Husted

Sponsor: Dept. of Interior - Bureau of Mines

Effective Termination Date: 7/31/75

Clearance of Accounting Charges: 7/31/75*

Grant/Contract Closeout Actions Remaining:

1. Final Report of Inventions
2. Gov't Property Inven. & Cert.
3. Classified Material Cert.

*Overrun transferred to Group Account

Assigned to: Applied Sciences Laboratory

COPIES TO:

Project Director
Director, EES
Assistant Director
Division Chief
EES Accounting
Patent Coordinator

Research Services/Photo Lab
EES Supply Services
General Office Services
Library, Technical Reports Section
Office of Computing Services
Project File
Other Sue Corbin



GEORGIA INSTITUTE OF TECHNOLOGY

EXPERIMENT STATION 225 North Avenue, Northwest Atlanta, Georgia 30332

A-1555

Hold for Kennedy

August 15, 1973

Mr. James Paone
Office of Mineral Supply
4015 Wilson Boulevard
Tower Number 3
Arlington, Virginia 22203

Reference: United States Bureau of Mines Contract H-0232066
Georgia Tech Research Institute Project A-1555
Monthly Financial Letter Number 1
June 22 through July 31, 1973


Dear Mr. Paone:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph of cumulative and planned expenditures are submitted:

<u>Item</u>	<u>July, 1973</u>	<u>Cumulative</u>
Personal Service	\$107.85	\$107.85
Retirement (8.5%)	9.17	9.17
Materials & Supplies	-	-
Travel	-	-
Overhead (65%)	70.10	70.10
	<u>\$187.12</u>	<u>\$187.12</u>

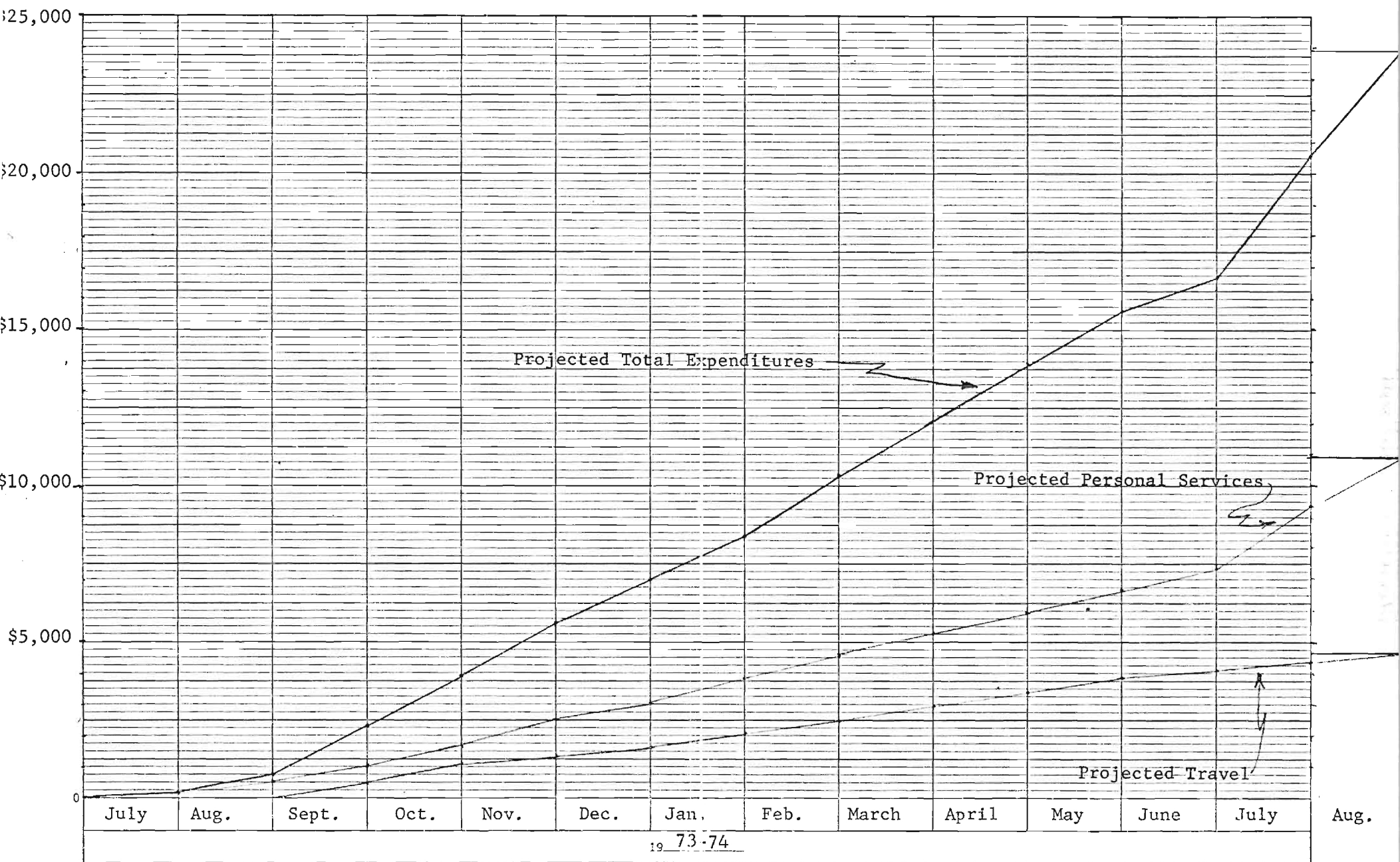
Actual expenses were used for July on the graph and projected for the remaining months. You will recall I mentioned that July expenditures would be low, but the rate is projected to increase and then level out for the remaining fiscal year. An increased rate is anticipated for the last two months in order to prepare the report.

Sincerely,

 John E. Husted
Project Director

JEH:mar

Attachment



Contract: H0232066
Project: A-1555

A-1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

September 18, 1973

Mr. James Paone
Office of Mineral Supply
4015 Wilson Boulevard
Tower Number 3
Arlington, Virginia 22203

Reference: United States Bureau of Mines Contract H-0232066
Georgia Tech Research Institute Project A-1555
Monthly Financial Letter Number 2
August 1 through August 31, 1973

Dear Mr. Paone:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph of cumulative and planned expenditures are submitted:

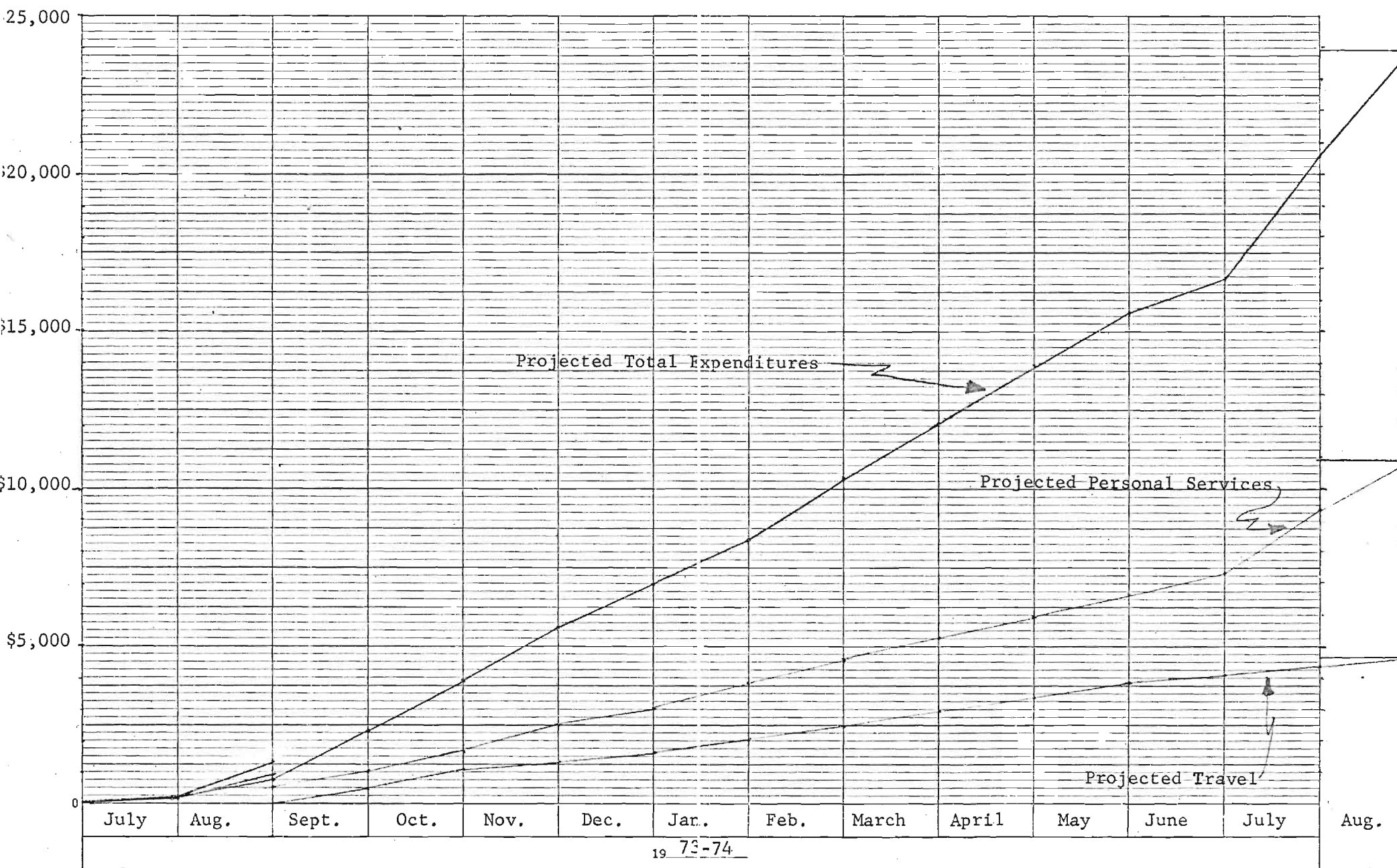
<u>Item</u>	<u>August, 1973</u>	<u>Cumulative</u>
Personal Service	665.11	772.96
Retirement (8.5%)	56.53	65.70
Materials & Supplies	3.12	3.12
Travel	-	-
Overhead (65%)	432.32	502.42
	<u>\$1,157.08</u>	<u>\$1,344.20</u>

Sincerely yours,

U John E. Husted
Project Director

JEH:mar

Attachments



Contract: H0232066
Project: A-1555

A-1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

October 12, 1973

Mr. James Paone
Office of Mineral Supply
U. S. Bureau of Mines
4015 Wilson Boulevard, Tower 3
Arlington, Virginia 22203

Reference: United States Bureau of Mines Contract H-0232066
Georgia Tech Research Institute Project A-1555
Monthly Financial Letter Number 3
September 1 through September 30, 1973

Dear Mr. Paone:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph of cumulative and planned expenditures are submitted.

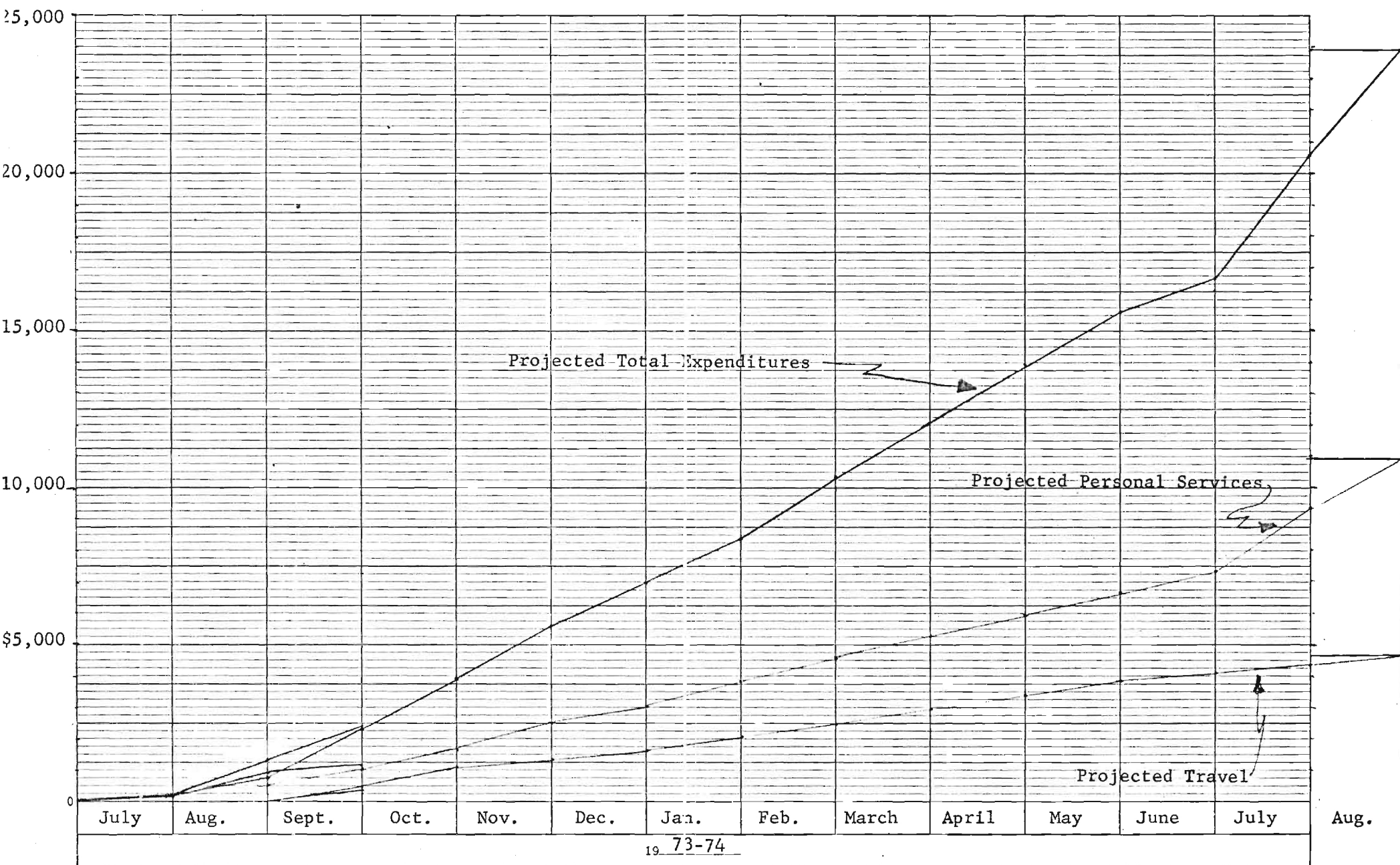
<u>Item</u>	<u>September, 1973</u>	<u>Cumulative</u>
Personal Services	\$ 449.40	\$1,222.36
Retirement (8.5%)	38.20	103.90
Materials and Supplies	1.80	4.92
Travel	298.26	298.26
Overhead (65%)	<u>292.11</u>	<u>794.53</u>
Total	<u>\$1,079.77</u>	<u>\$2,423.97</u>

Sincerely yours,

John E. Husted
Project Director

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Attachment



Contract: H0232066
Project: A-1555



GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

November 14, 1973

Mr. James Paone
Office of Mineral Supply
4015 Wilson Boulevard
Tower Number 3
Arlington, Virginia 22203

Reference: UNITED STATES BUREAU OF MINES CONTRACT H-0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT A-1555
MONTHLY FINANCIAL LETTER NUMBER 4
October 1 through October 31, 1973


Dear Mr. Paone:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph of cumulative and planned expenditures are submitted:

<u>Item</u>	<u>October, 1973</u>	<u>Cumulative</u>
Personal Service	\$323.57	\$1,545.93
Retirement (8.5%)	27.50	131.40
Materials & Supplies	28.66	33.58
Travel	301.79	600.05
Overhead (65%)	210.32	1,004.85
	<u>\$891.84</u>	<u>\$3,315.81</u>

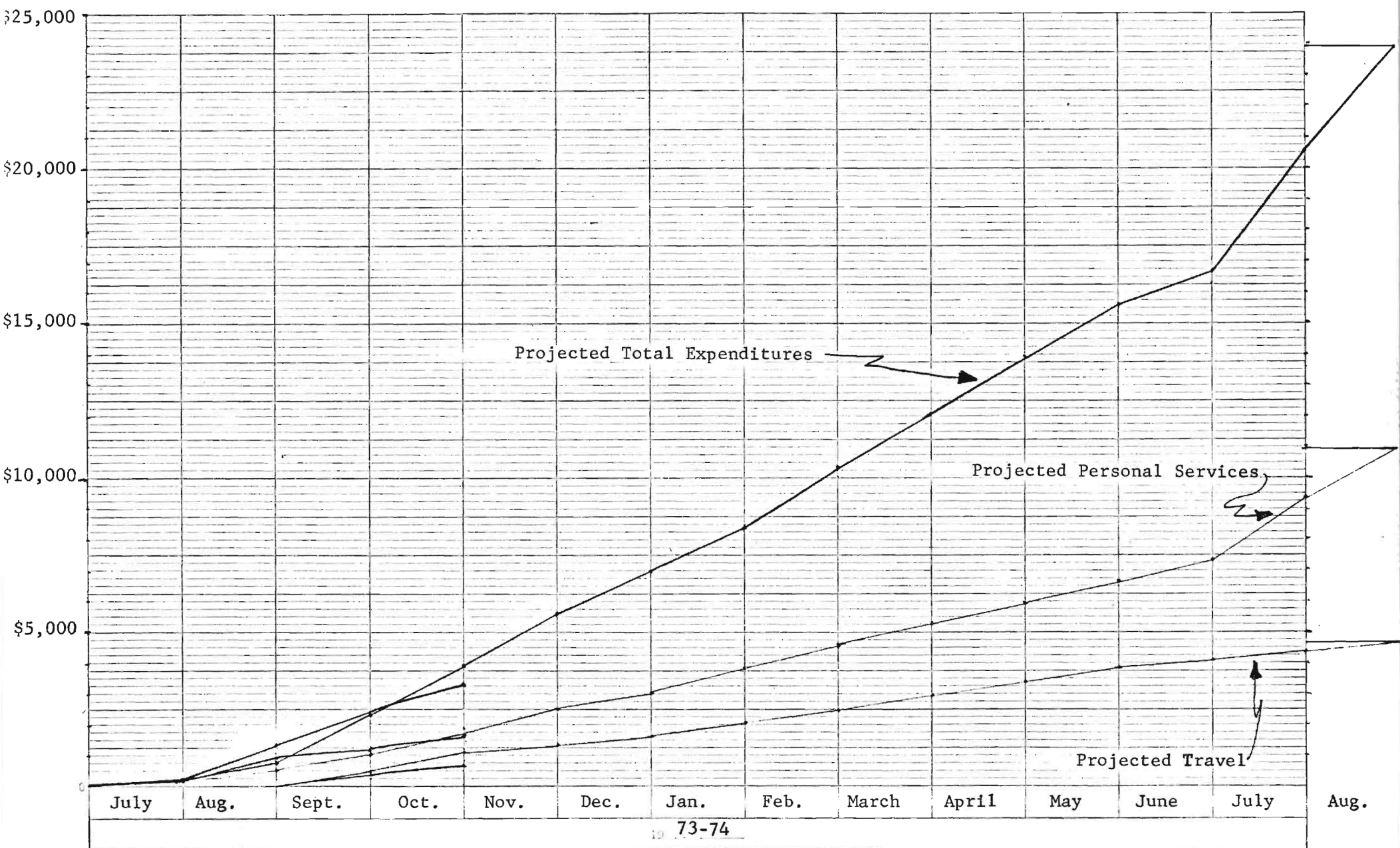
You will note that the total and travel appear low. Travel to Montana and Minnesota during the subject period extended into November and will be included in the November report. This should bring travel much closer to the projected expenditure.

Yours sincerely,

 John E. Husted
Project Director

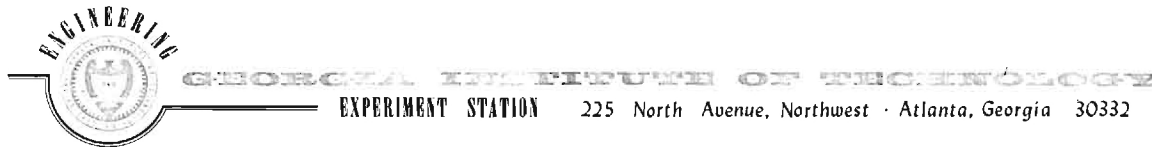
JEH:mar

Attachment



Contract: H0232066

Project: A-1555



December 7, 1973

Mr. James Paone
Office of Mineral Supply
4015 Wilson Boulevard
Tower Number 3
Arlington, Virginia 22203

Reference: UNITED STATES BUREAU OF MINES CONTRACT H-0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT A-1555
MONTHLY FINANCIAL LETTER NUMBER 5
NOVEMBER 1 through NOVEMBER 30, 1973

Dear Mr. Paone:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph are submitted:

<u>Item</u>	<u>November, 1973</u>	<u>Cumulative</u>
Personal Service	\$527.06	\$2,072.99
Retirement (8.5%)	44.80	176.20
Materials & Supplies	1.62	35.20
Travel	493.30	1,093.35
Overhead (65%)	342.59	1,347.44
	<u>\$1,409.37</u>	<u>\$4,725.18</u>

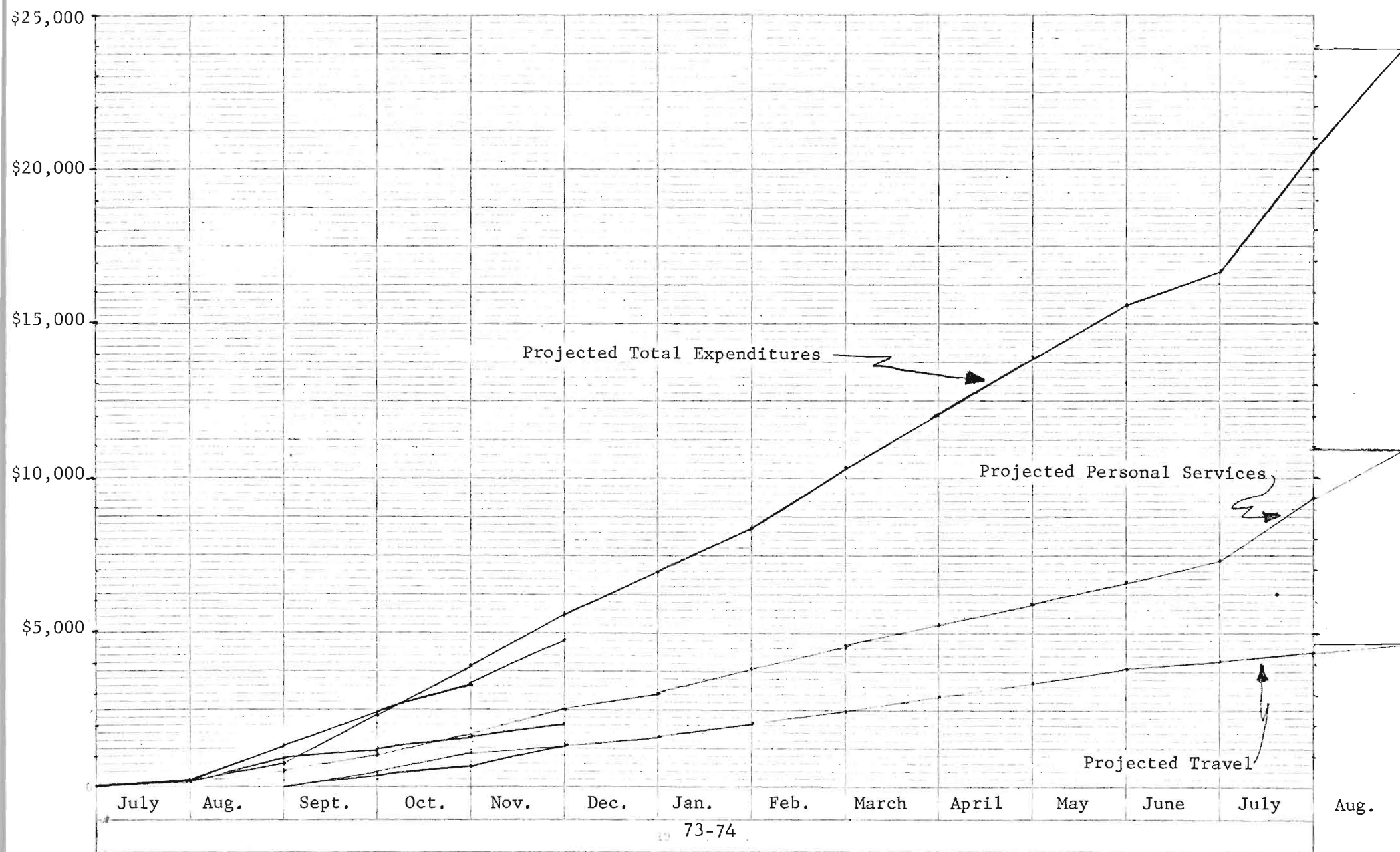
Sincerely yours,

✓
John E. Husted
Project Director

JEH:mar

Attachment

1 YEAR BY MONTHS 40 3170
 X 100 DIVISIONS
 N 1 FEB 6 5500 00



Contract: H0232066



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

January 9, 1974

Mr. James Paone
Office of Mineral Supply
4015 Wilson Boulevard
Tower Number 3
Arlington, Virginia 22203


Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H-0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT A-1555
MONTHLY FINANCIAL LETTER NUMBER 6
OCTOBER 1 through DECEMBER 31, 1973

Dear Mr. Paone:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph are submitted:

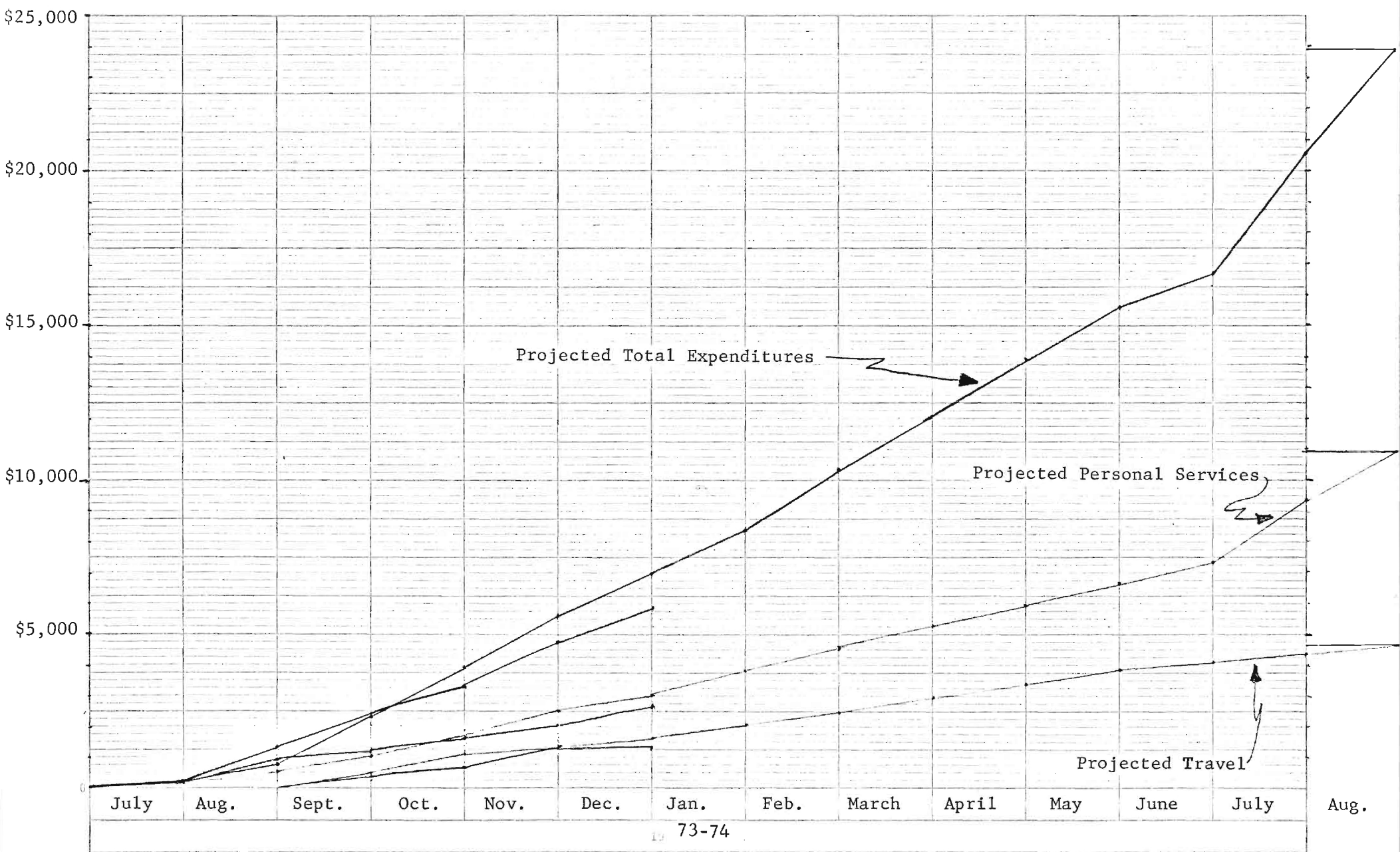
<u>Item</u>	<u>December, 1973</u>	<u>Cumulative</u>
Personal Services	602.52	2,675.51
Retirement (8.5%)	51.21	227.42
Materials & Supplies	50.46	85.66
Travel	115.01	1,208.36
Overhead (65%)	391.64	1,739.08
Total:	<u>\$1,210.84</u>	<u>\$5,936.03</u>

Sincerely yours,

 John E. Husted
Project Director

JEH:mar

Attachment





ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

February 15, 1974

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
U.S. Bureau of Mines
Interior Building
Washington, D.C. 20240

Reference: U.S. Bureau of Mines Contract Number H-0232066
Georgia Tech Research Institute Project Number A-1555
Monthly Financial Letter Number 7
January 1 through January 31, 1974

Dear Mr. Brantley:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph are submitted:

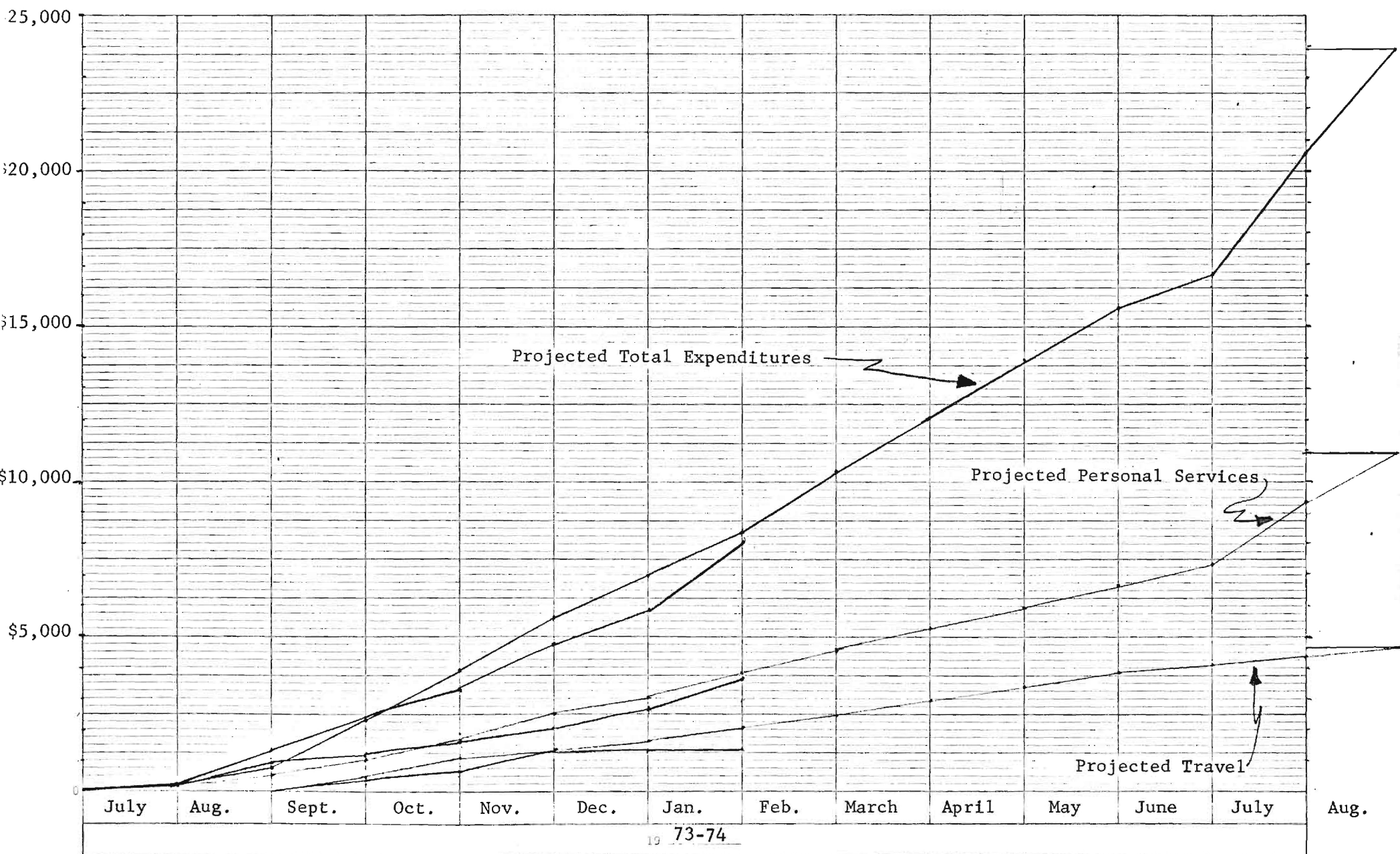
<u>Item</u>	<u>January, 1974</u>	<u>Cumulative</u>
Personal Services	\$1,258.32	\$3,933.83
Retirement (8.5%)	106.96	334.38
Materials & Supplies	2.70	88.36
Travel	74.91	1,283.27
Overhead (65%)	817.91	2,556.99
	<u>\$2,260.80</u>	<u>\$8,196.83</u>

Sincerely yours,

John E. Husted
Project Director

JEH:mar

Attachment



Contract: H0232066
Project: A-1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

March 8, 1974

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
U.S. Bureau of Mines
Interior Building
Washington, D.C. 20240

Reference: U.S. Bureau of Mines Contract Number H-0232066
Georgia Tech Research Institute Project Number A-1555
Monthly Financial Letter Number 8
February 1 through February 28, 1974

Dear Mr. Brantley:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph are submitted:

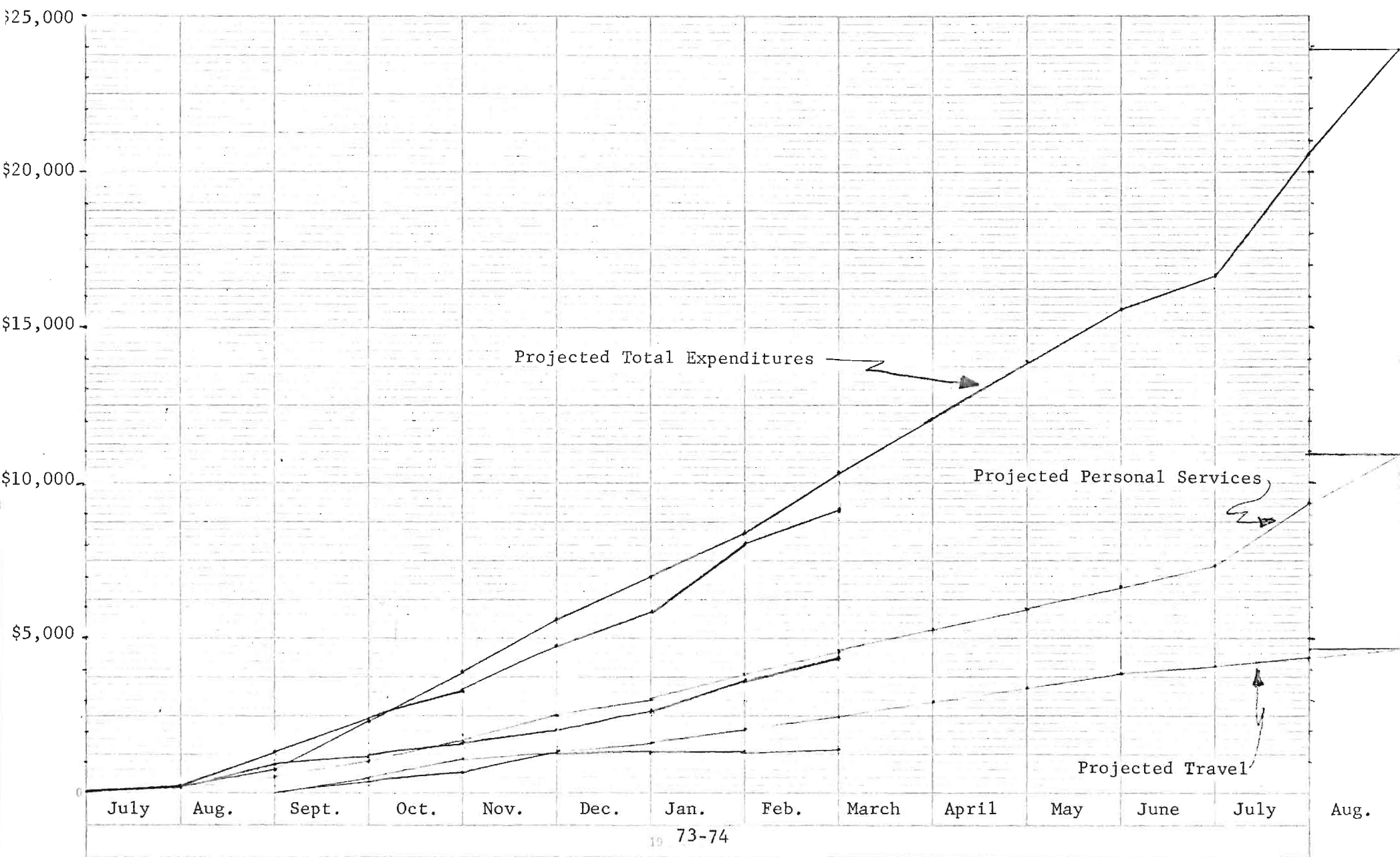
<u>Item</u>	<u>February, 1974</u>	<u>Cumulative</u>
Personal Services	\$449.40	\$4,383.23
Retirement (8.5%)	38.20	372.57
Materials & Supplies	50.52	138.88
Travel	155.44	1,438.71
Overhead (65%)	292.11	2,849.10
	<u>\$985.67</u>	<u>\$9,182.49</u>

Sincerely yours,

✓ John E. Husted
Project Director

JEH:mar

Attachments



Contract: H0232066
Project: A-1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

April 9, 1974

Mr. F. E. Brantley
Office of Assistant Director,
Mineral Supply
U.S. Bureau of Mines
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT A-1555
MONTHLY FINANCIAL LETTER NUMBER 9
MARCH 1 through MARCH 31, 1974

Dear Mr. Brantley:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph are submitted:

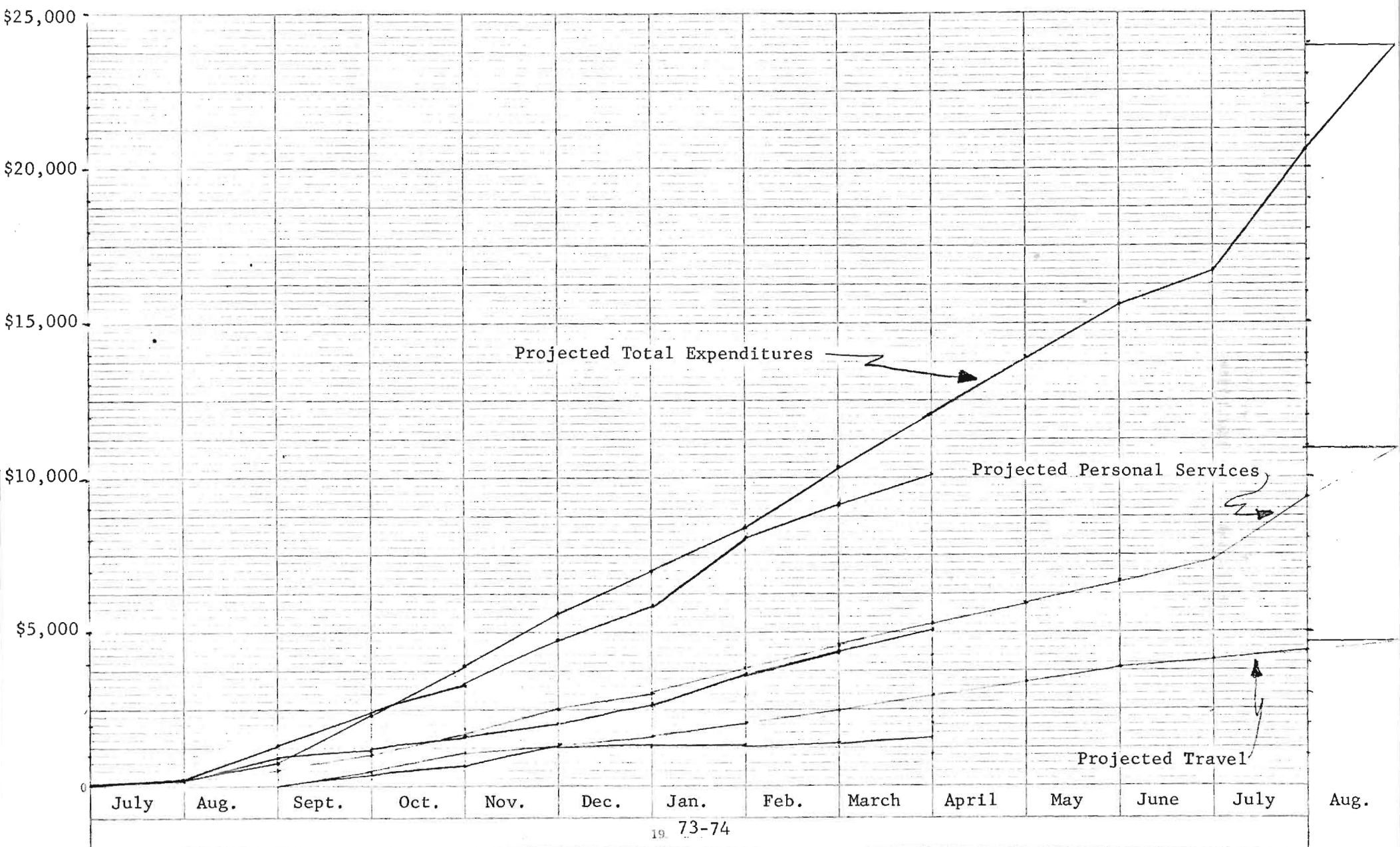
<u>Item</u>	<u>March, 1974</u>	<u>Cumulative</u>
Personal Services	\$449.40	\$4,832.63
Retirement (8.5%)	38.20	410.77
Materials & Supplies	2.82	141.70
Travel	176.25	1,614.96
Overhead (65%)	292.11	3,141.21
	<u>\$958.78</u>	<u>\$10,141.27</u>

Sincerely yours,

U J. E. Husted
Project Director

JEH:mar

Attachment



Contract: H0232066
Project: A-1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

May 14, 1974

Mr. F. E. Brantley
Office of Assistant Director,
Mineral Supply
U.S. Bureau of Mines
Washington, D.C. 20240


Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H-0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT A-1555
MONTHLY FINANCIAL LETTER NUMBER 10
APRIL 1 through APRIL 30, 1974

Dear Mr. Brantley:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph are submitted:

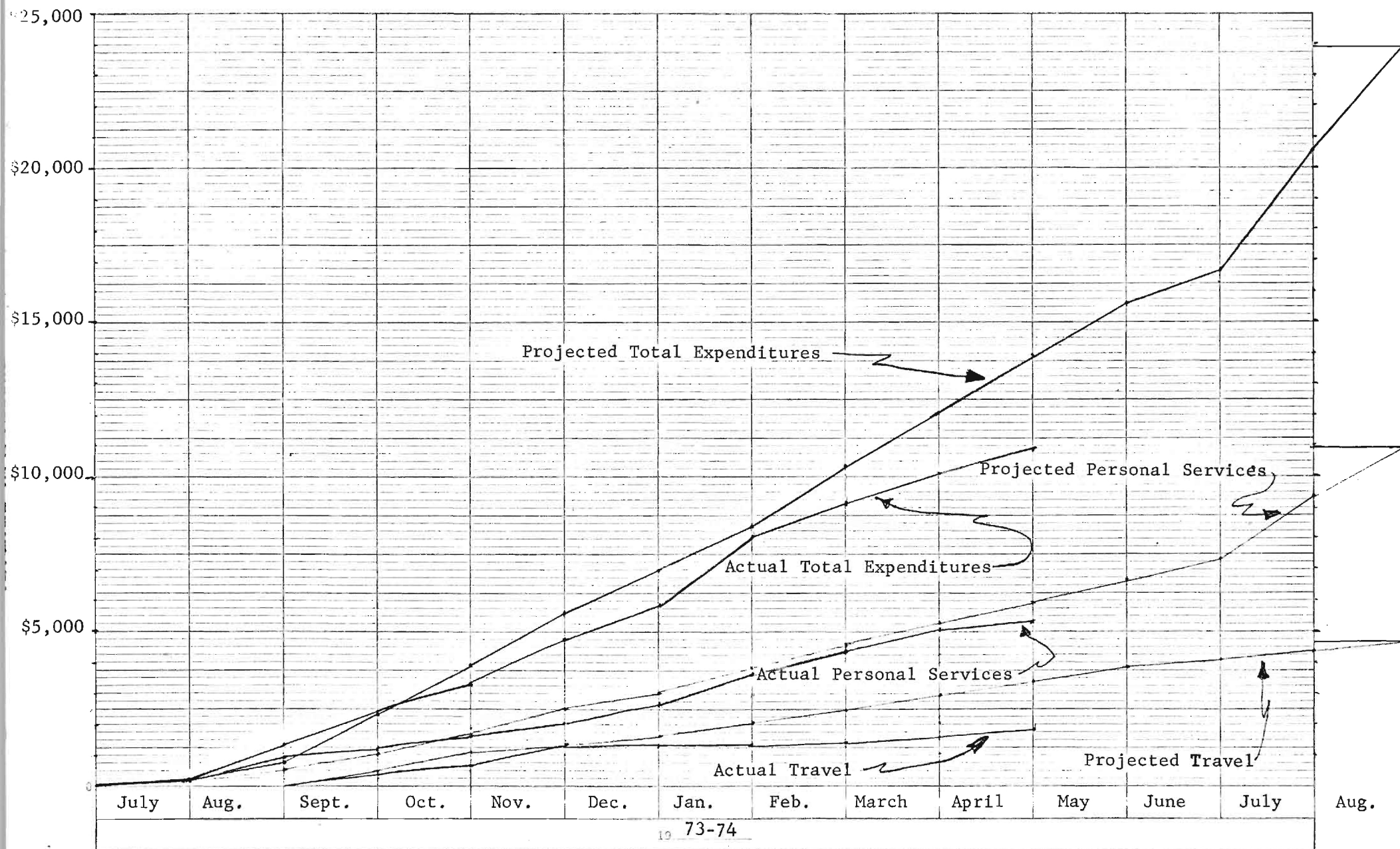
<u>Item</u>	<u>April, 1974</u>	<u>Cumulative</u>
Personal Services	\$437.95	\$5,270.58
Retirement (8.5%)	37.23	448.00
Material & Supplies	2.22	143.92
Travel	-	1,614.96
Overhead (65%)	284.67	3,425.88
	<hr/> \$762.07 <hr/>	<hr/> \$10,903.34 <hr/>

Sincerely yours.

 John E. Husted
Project Director

JEH:mar

Attachment





ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

June 13, 1974

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
U.S. Bureau of Mines
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H-0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT A-1555
MONTHLY FINANCIAL LETTER NUMBER 11
MAY 1 through MAY 31, 1974

Dear Mr. Brantley:

In accordance with Item 2.1 of our Contract, the following financial statement and attached graph are submitted:

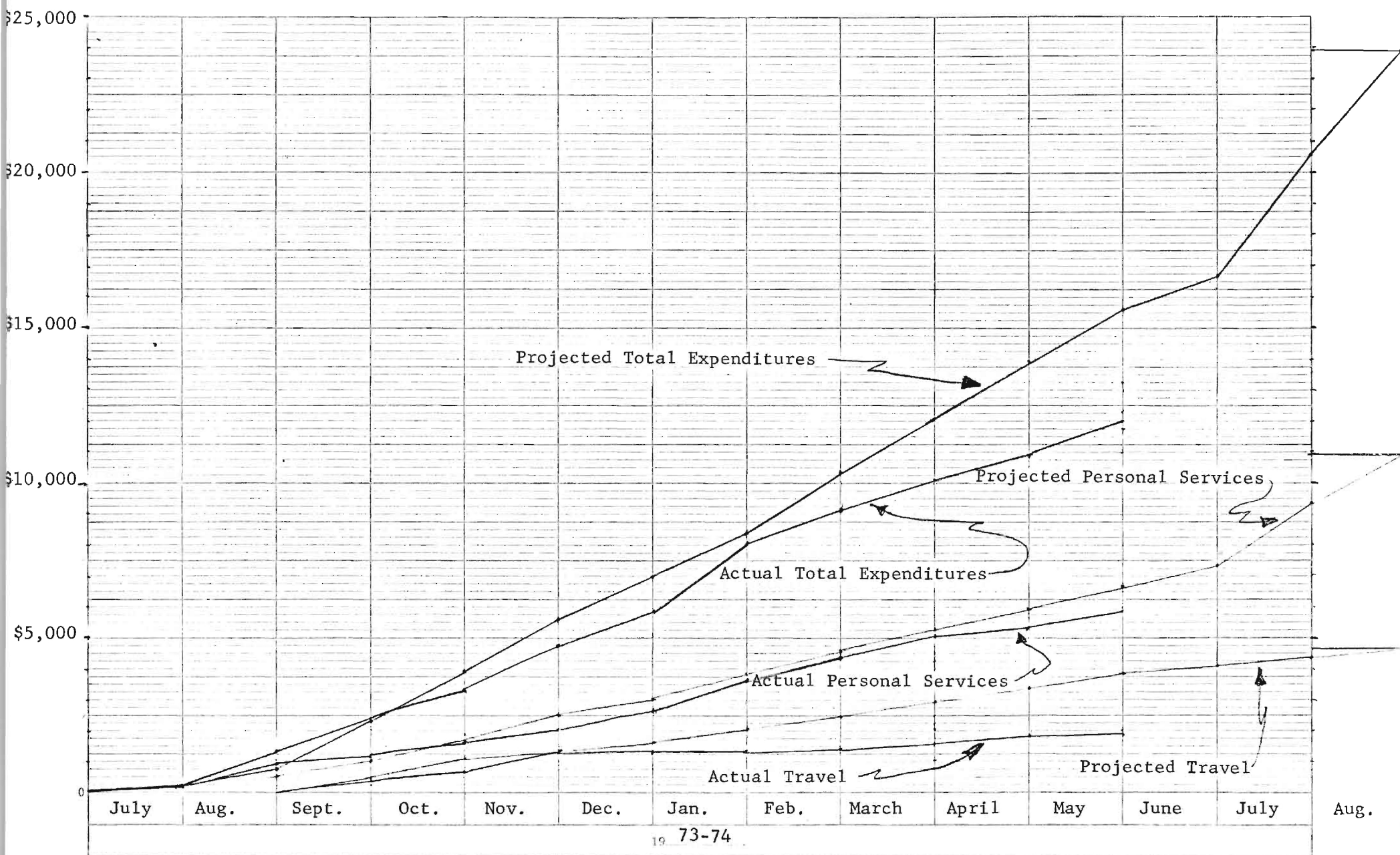
<u>Item</u>	<u>May, 1974</u>	<u>Cumulative</u>
Personal Services	\$551.33	\$5,822.11
Retirement (8.5%)	46.89	494.88
Materials & Supplies	2.34	146.26
Travel	186.00	1,800.96
Overhead (65%)	358.49	3,784.37
	<u>\$1,145.02</u>	<u>\$12,048.58</u>

Sincerely yours,

John E. Husted
Project Director

JEH:mar

Attachment



Contract: H0232066
Project: A-1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

July 15, 1974

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
Bureau of Mines
Department of the Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER S0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
MONTHLY FINANCIAL LETTER NUMBER 12
JUNE 1 through JUNE 30, 1974

Dear Mr. Brantley:

In accordance with Item 2.1 of our Contract, the following financial statement and attached graph are submitted:

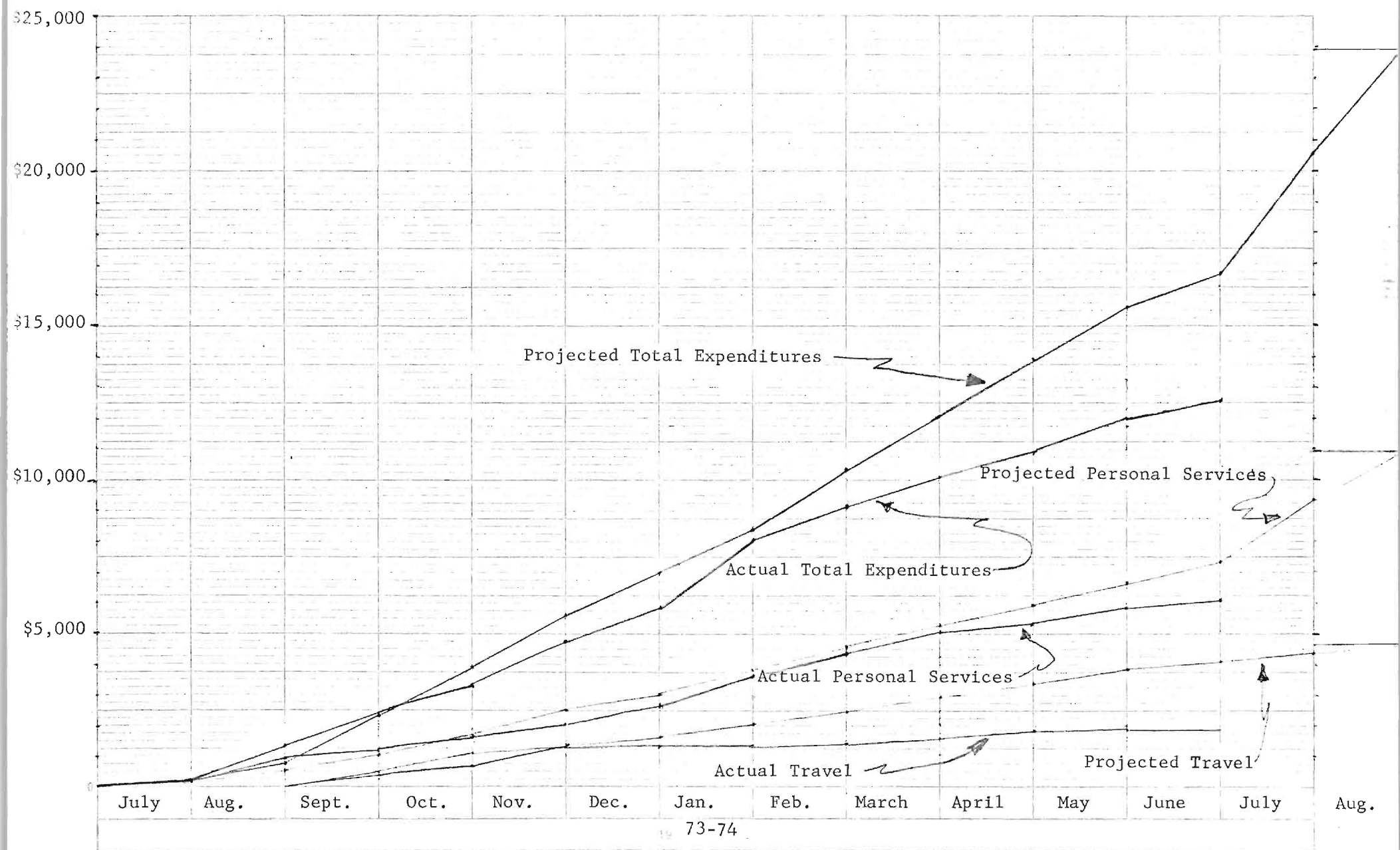
<u>Item</u>	<u>June, 1974</u>	<u>Cumulative</u>
Personal Services	\$269.64	\$6,091.75
Retirement (8.5%)	22.92	517.80
Materials & Supplies	1.92	148.18
Travel	26.20	1,827.16
Overhead (65%)	175.27	3,959.64
	<u>\$495.95</u>	<u>\$12,544.83</u>

Sincerely yours,

U John E. Husted
Project Director

JEH:mar

Attachment



Contract: H0232066
Project: A-1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

August 9, 1974

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
Bureau of Mines
U.S. Department of the Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER S0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
MONTHLY FINANCIAL LETTER NUMBER 13
JULY 1 through JULY 31, 1974

Dear Mr. Brantley:

In accordance with Item 2.1 of our Contract, the following financial statement and attached graph are submitted:

<u>Item</u>	<u>July, 1974</u>	<u>Cumulative</u>
Personal Services	\$18.38	\$6,110.13
Retirement (8.77%)	1.61	519.41
Material & Supplies	4.32	152.50
Travel	197.75	2,024.91
Overhead (65%)	11.95	3,971.59
	<u>\$234.01</u>	<u>\$12,778.54</u>

The retirement amount is in accordance with the new University System rate, effective July 1, 1974.

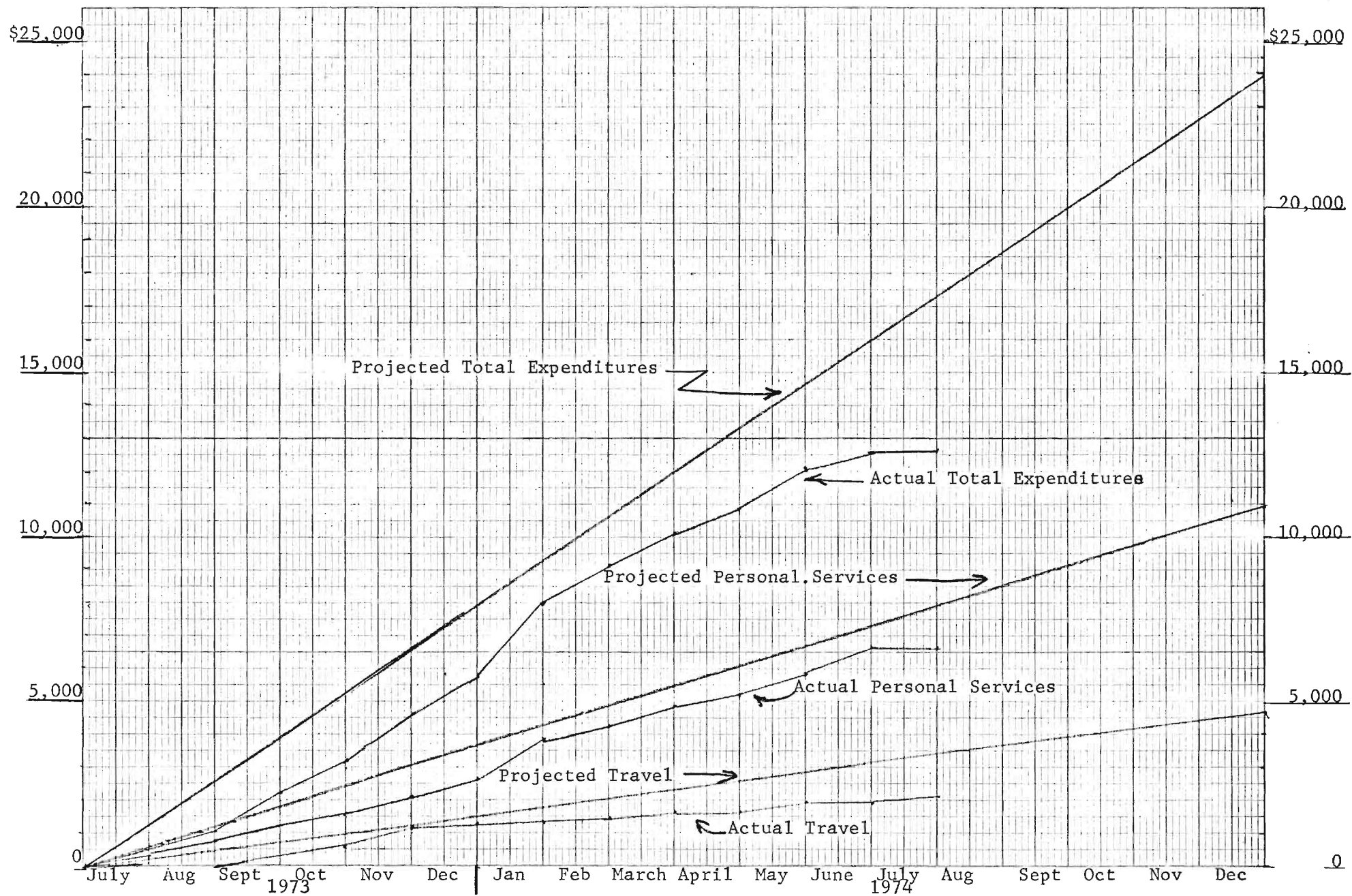
The travel reflects June charges that had not cleared Accounting by the end of June.

Sincerely yours.

U John E. Husted
Project Director

JEH:mar

attachment



Contract: H0232066
Project: A-1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

September 12, 1974

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
Bureau of Mines
Department of the Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER SO232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
MONTHLY FINANCIAL LETTER NUMBER 14
AUGUST 1 through AUGUST 31, 1974

Dear Mr. Brantley:

In accordance with Item 2.1 of our Contract, the following financial statement and attached graph are submitted:

<u>Item</u>	<u>August, 1974</u>	<u>Cumulative</u>
Personal Services	\$ ---	\$10,920.00
Retirement (8.77%)	---	519.40
Materials & Supplies	1.38	153.88
Travel	260.62	2,285.53
Overhead (65%)	---	3,126.41
	<u>\$262.00</u>	<u>\$13,040.53</u>

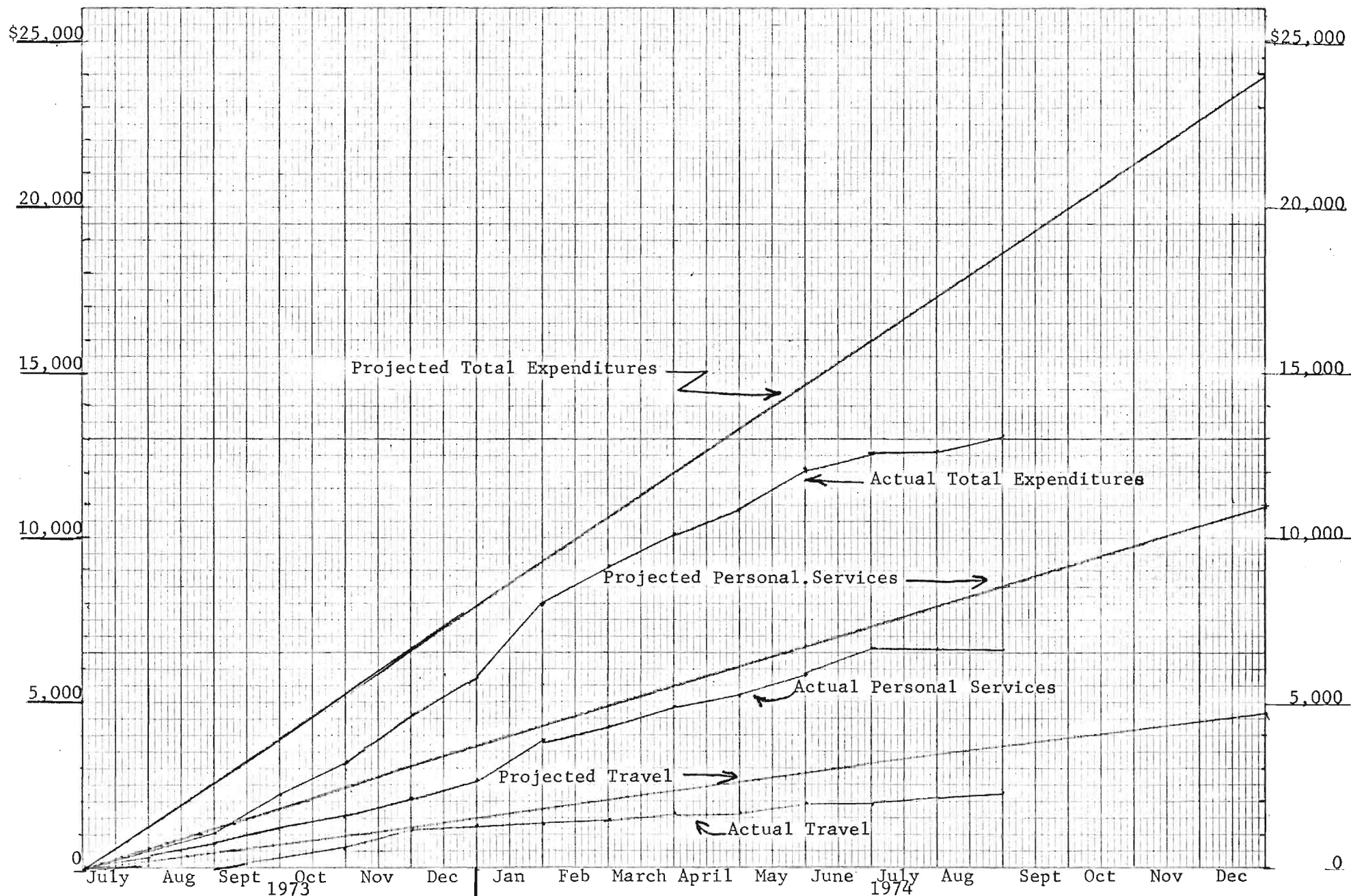
You will note, as per our conversation on August 29, that no work was charged during August and is not expected to be charged for September. Work will resume in October. Travel expenditures are for the end of July that were not posted in time for the July statement. Materials and Supplies are for Xerox copies of the financial letter filed in August.

Sincerely yours,

✓ John E. Husted
Project Director

JEH:ver

Attachment



Contract: H0232066
Project: A-1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

October 11, 1974

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
Bureau of Mines
Department of the Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H-0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
MONTHLY FINANCIAL LETTER NUMBER 15
SEPTEMBER 1 through SEPTEMBER 30, 1974


Dear Mr. Brantley:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph are submitted:

<u>Item</u>	<u>September, 1974</u>	<u>Cumulative</u>
Personal Services	--	\$6,110.13
Retirement (8.77%)	--	519.40
Materials & Supplies	\$5.67	159.55
Travel	--	2,285.53
Overhead (65%)	--	3,971.59
	<u>\$5.67</u>	<u>\$13,046.20</u>

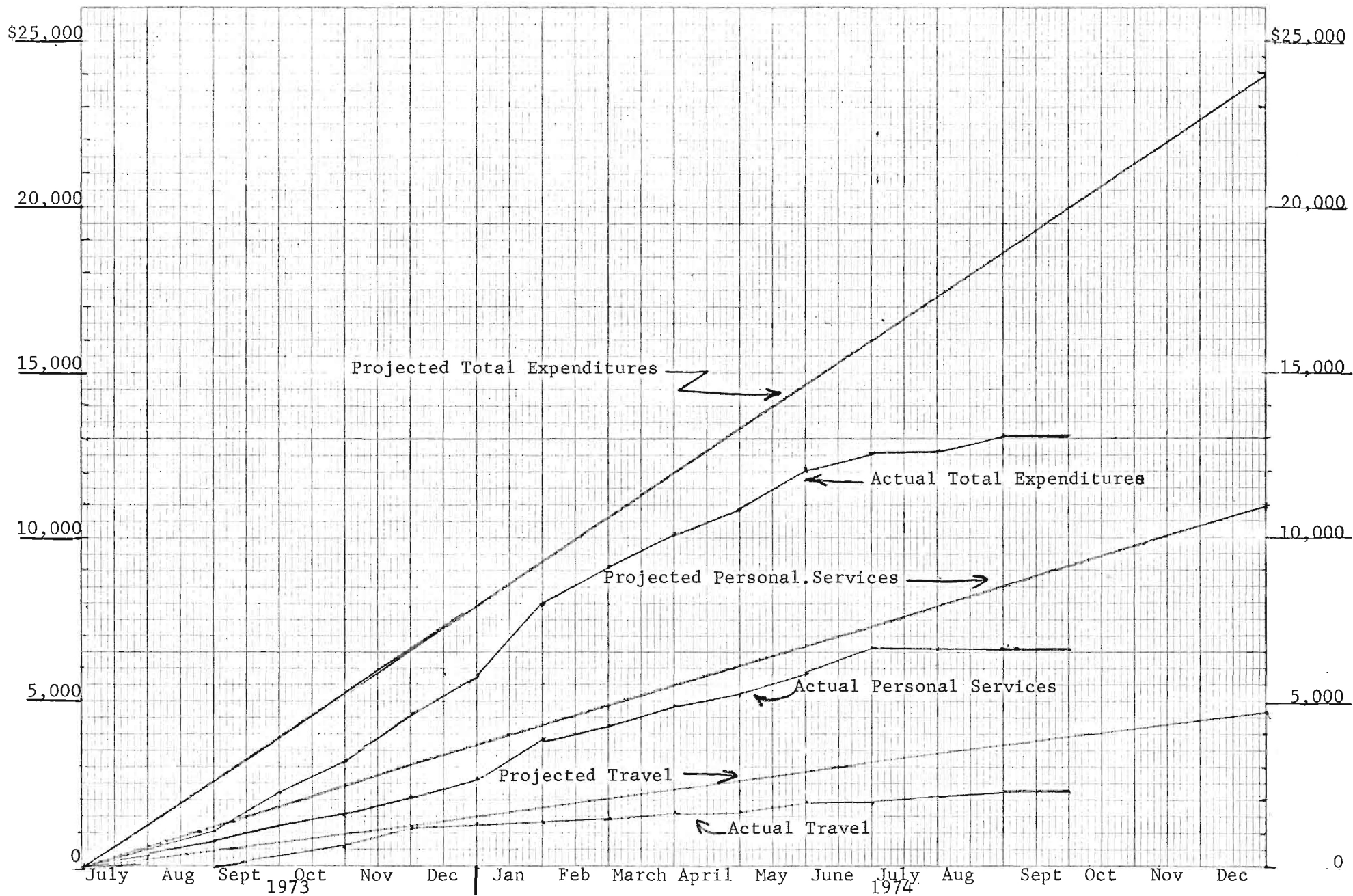
It will be noted that excepting some xerox charges under Materials and Supplies for the monthly financial letter, no expenditures were made in September. It will also be noted that, inadvertently, the budgeted personal services were entered in the cumulative total for August instead of the expenditures. The correct totals are reflected in this statement.

Sincerely,

 John E. Husted
Project Director

JEH:mar

Attachment



Contract: H0232066

Project: A-1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

November 8, 1974

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
Bureau of Mines
Department of the Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
MONTHLY FINANCIAL LETTER NUMBER 16
OCTOBER 1 through OCTOBER 31, 1974

Dear Mr. Brantley:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph are submitted:

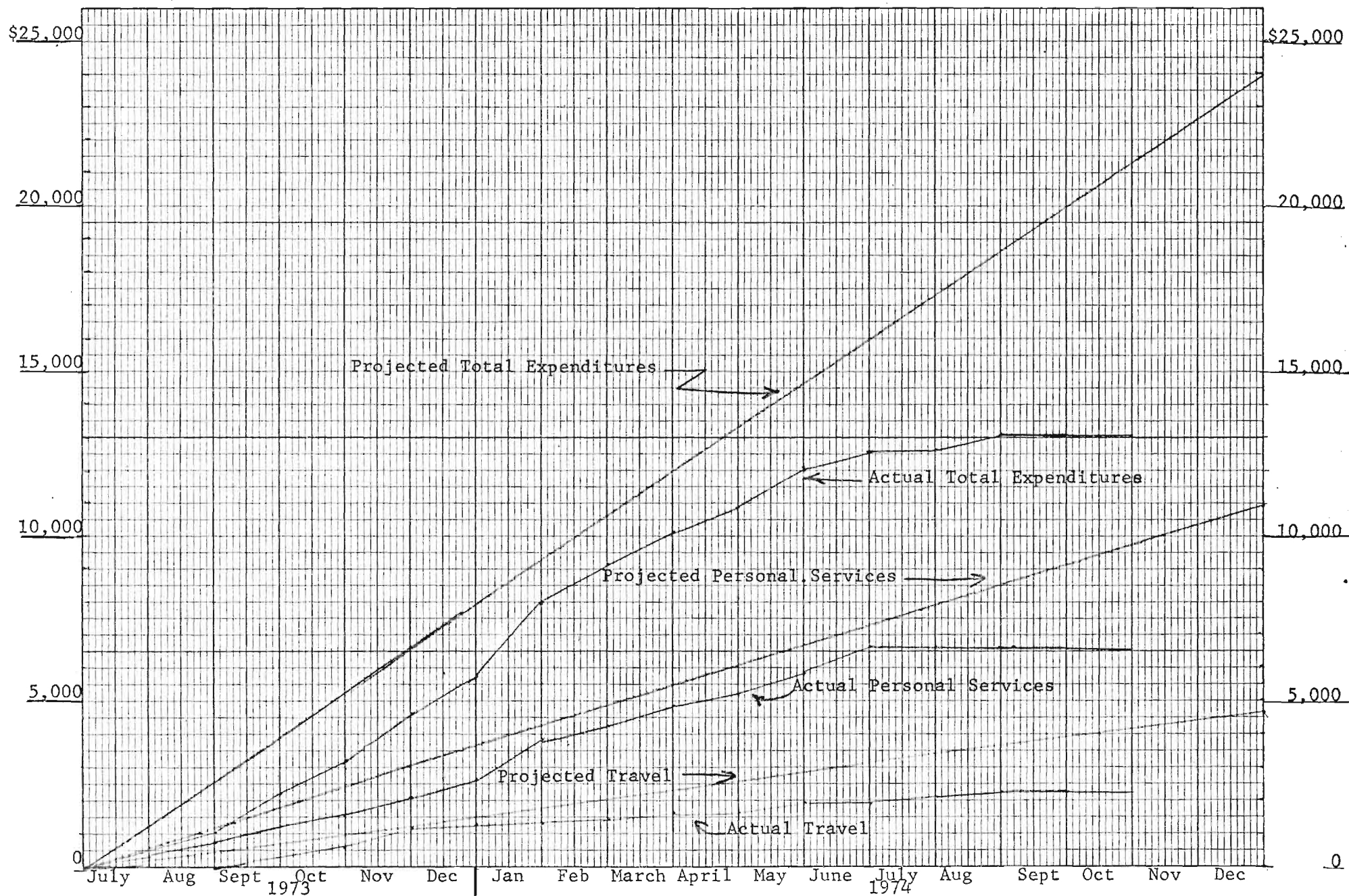
<u>Item</u>	<u>October, 1974</u>	<u>Cumulative</u>
Personal Services	\$142.44	\$6,252.57
Retirement (8.77%)	12.49	531.89
Materials & Supplies	2.28	161.83
Travel	369.63	2,655.16
Overhead (65%)	92.59	4,064.18
	<u>\$619.43</u>	<u>\$13,665.63</u>

Sincerely,

U John E. Husted

JEH:mar

Attachment





ENGINEERING EXPERIMENT STATION
GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

December 13, 1974

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
Bureau of Mines
Department of the Interior
Washington, D.C. 20240

Reference: U.S. Bureau of Mines Contract Number H0232066
Georgia Tech Research Institute Project Number A-1555
Monthly Financial Letter Number 17
November 1 through November 30, 1974

Dear Mr. Brantley:

In accordance with Item 2.1 of our contract, the following financial letter and attached graph are submitted:

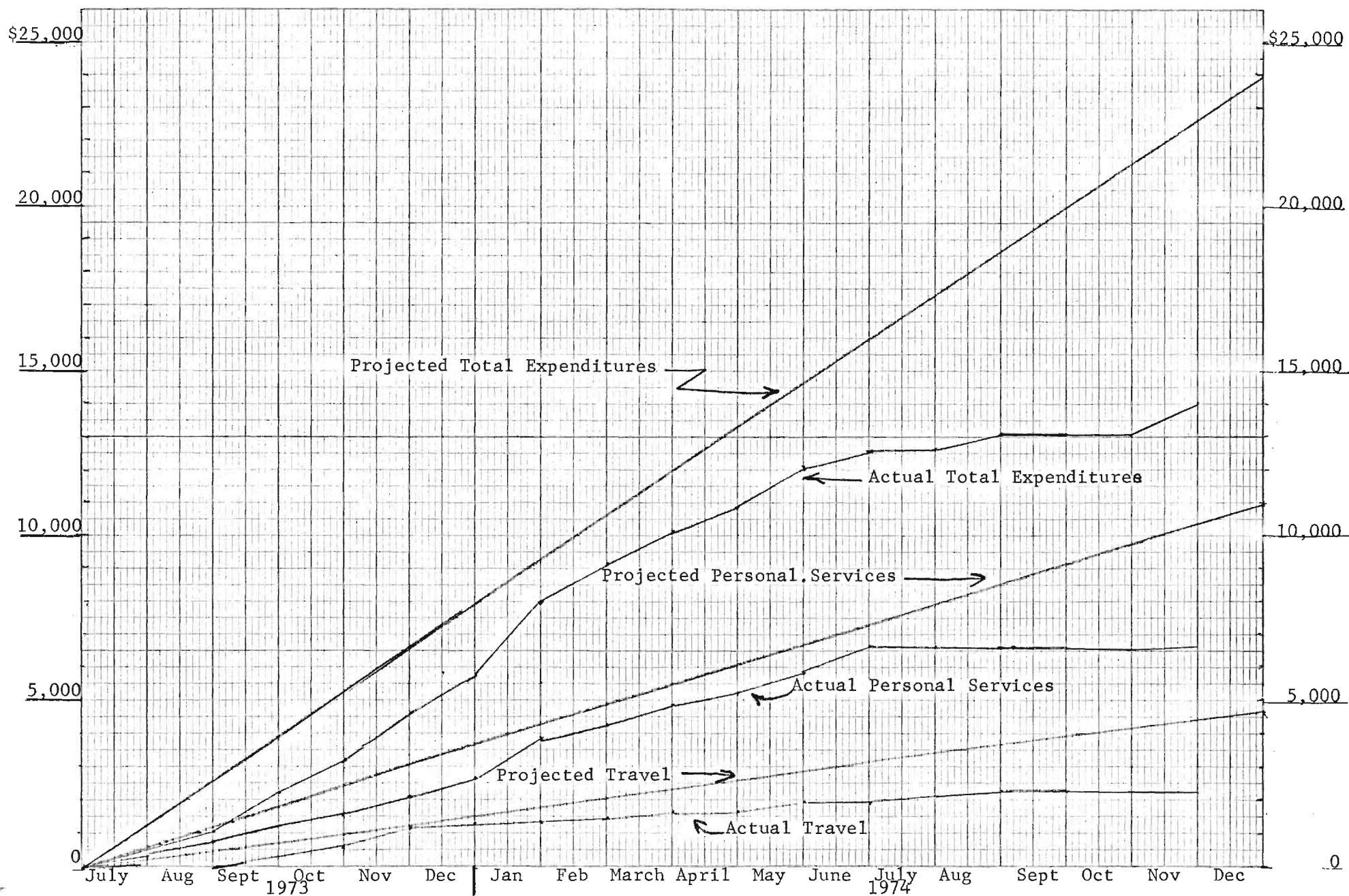
<u>ITEM</u>	<u>NOVEMBER, 1974</u>	<u>CUMULATIVE</u>
Personal Services	\$205.08	\$6,457.65
Retirement (8.77%)	17.99	549.88
Materials & Supplies	1.32	163.15
Travel	-	2,655.16
Overhead (65%)	133.30	4,197.48
	<u>\$357.69</u>	<u>\$14,023.32</u>

Sincerely yours,

John E. Husted
Project Director

JEH:mar

Attachment



**PUBLIC VOUCHER FOR PURCHASES AND
SERVICES OTHER THAN PERSONAL**

VOUCHER NO.

17

DEPARTMENT, BUREAU, OR ESTABLISHMENT AND LOCATION

S. Bureau of Mines
Division of Contracts
Building 20
Denver Federal Center
Denver, Colorado 80225

DATE VOUCHER PREPARED

January 9, 1975

CONTRACT NUMBER AND DATE

H0232066 6/22/73

REQUISITION NUMBER AND DATE

SCHEDULE NO.

PAID BY

DATE INVOICE RECEIVED

DISCOUNT TERMS

PAYEE'S ACCOUNT NUMBER

A-1555

GOVERNMENT B/L NUMBER

PAYEE'S
NAME
AND
ADDRESS

Georgia Tech Research Institute
Georgia Institute of Technology
Atlanta, Georgia 30332

Contract Amount: \$ 23, 989.00

DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)	CUMULATIVE AMOUNT	CURRENT AMOUNT
1/74	Salaries and Wages	\$ 6,560.19	\$ 102.54
	Employee Retirement Benefits	549.88	17.99
31/74	Materials and Supplies	164.41	1.26
	Equipment	-	-
	Travel	2,655.16	-
	Computer	-	-
	Overhead (65%)	4,264.13	66.65
	Sub Total	14,193.77	188.44
	Less Reserves Withheld	(2,129.07)	(28.27)
		12,064.70	160.17
	Cost Reimbursable Provisional Payment	\$ 12,064.70	

Continuation sheet(s) if necessary (Payee must NOT use the space below) **TOTAL** \$ 160.17

APPROVED FOR	EXCHANGE RATE	DIFFERENCES
COMPLETE = \$	= \$1.00	
PARTIAL BY ²		
FINAL		
PROGRESS		
ADVANCE	TITLE	Amount verified; correct for (Signature or initials)

I, the undersigned, in authority vested in me, I certify that this voucher is correct and proper for payment.

(Date) (Authorized Certifying Officer) ² (Title)

ACCOUNTING CLASSIFICATION

CHECK NUMBER	ON TREASURER OF THE UNITED STATES	CHECK NUMBER	ON (Name of bank)
CASH	DATE	PAYEE ³	

When stated in foreign currency, insert name of currency.
The ability to certify and authority to approve are combined in one person, one signature only is necessary.
Otherwise the approving officer will sign in the space provided, over his official title.
When a voucher is receipted in the name of a company or corporation, the name of the person writing the
company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe
Company, per John Smith, Secretary", or "Treasurer", as the case may be.

PER

TITLE

File: A1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

January 20, 1975

Mr. F. E. Brantley
Office of Assistant Director,
Mineral Supply
U.S. Bureau of Mines
Tower 3
4015 Wilson Boulevard
Arlington, Virginia 22203

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
MONTHLY FINANCIAL LETTER NUMBER 18
DECEMBER 1 through DECEMBER 31, 1974

Dear Mr. Brantley:

In accordance with Item 2.1 of our Contract, the following financial statement and attached graph are submitted. The graph reflects a no-cost time extension until June 30, 1975. Personal Services and Travel reflect the December trip to Arlington.

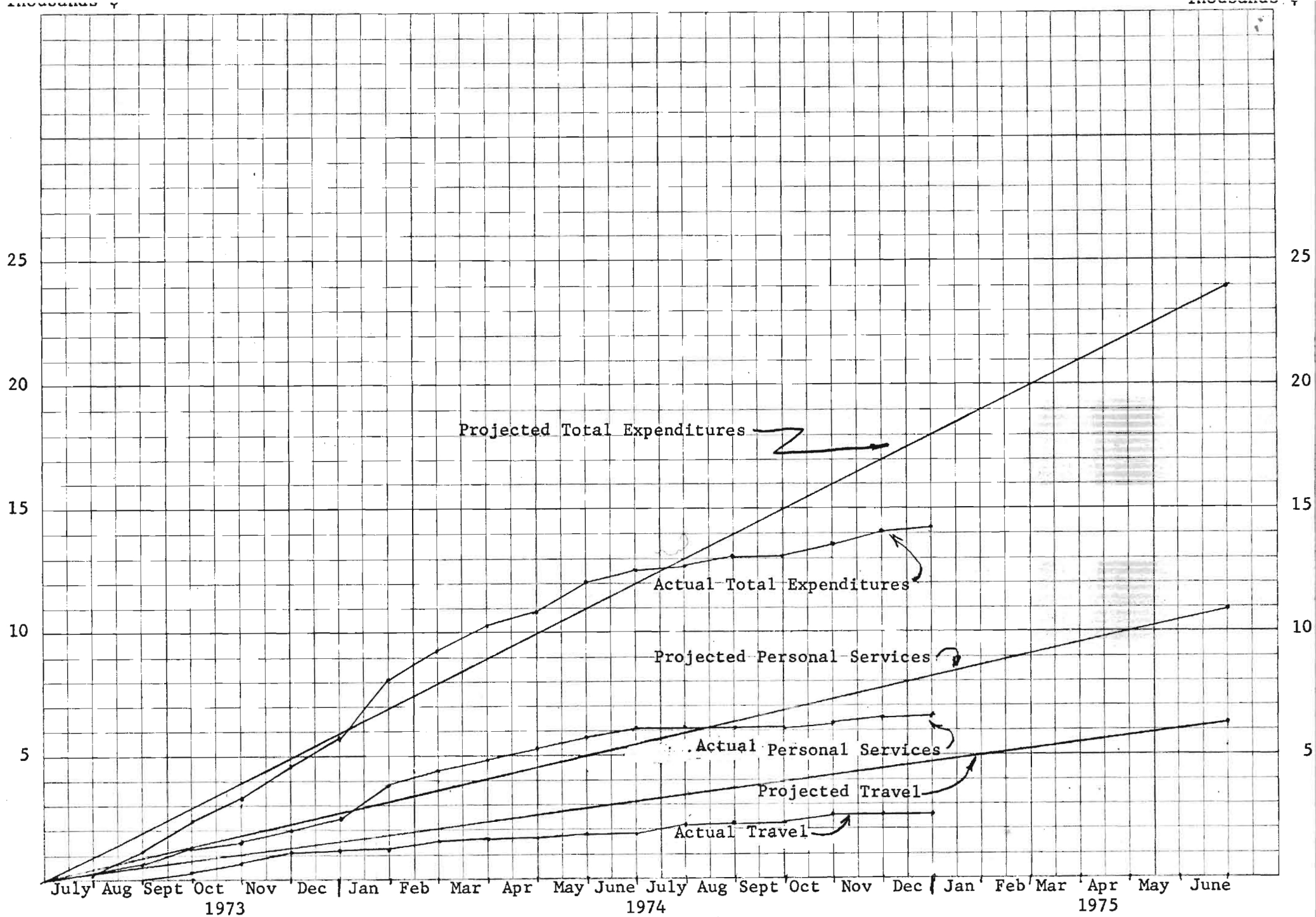
<u>ITEM</u>	<u>DECEMBER, 1974</u>	<u>CUMULATIVE</u>
Personal Services	\$102.54	\$6,650.19
Retirement (8.77%)	8.99	558.87
Materials & Supplies	1.26	164.41
Travel	82.35	2,737.51
Overhead (65%)	66.65	4,264.13
	<u>\$261.79</u>	<u>\$14,375.11</u>

Sincerely yours,

U John E. Husted
Project Director

JEH:mar

Attachment



Standard Form 1034 7 GAO 5000 1034--114		PUBLIC VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL		VOUCHER NO.	
DEPARTMENT, BUREAU, OR ESTABLISHMENT AND LOCATION		DATE VOUCHER PREPARED		SCHEDULE NO.	
S. Bureau of Mines ction of Contracts ilding 20 nver Federal Center nver, Colorado 80225		February 11, 1975 CONTRACT NUMBER AND DATE H0232066 6/22/73 REQUISITION NUMBER AND DATE		PAID BY	
PAYEE'S NAME AND ADDRESS		Georgia Tech Research Institute Georgia Institute of Technology Atlanta, Georgia 30332		DATE INVOICE RECEIVED	
				DISCOUNT TERMS	
				PAYEE'S ACCOUNT NUMBER A-1555	
				GOVERNMENT B/L NUMBER	
Contract Amount: \$ 23, 989.00					
DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)		CUMULATIVE AMOUNT	CURRENT AMOUNT	
1/75 o 31/75 presents a illing riod and t Neces- rily the ne Charges re Incurred.	Salaries and Wages Employee Retirement Benefits Materials and Supplies Equipment Travel Computer Overhead (65%) Sub Total Less Reserves Withheld Cost Reimbursable Provisional Payment		\$ 6,560.19 558.87 164.53 - 2,737.51 - 4,264.13 14,285.23 (2,142.78) 12,142.45 \$ 12,142.45	\$ - 8.99 .12 - 82.35 - 91.46 (13.71) 77.75	
Continuation sheet(s) if necessary		(Payee must NOT use the space below)		TOTAL	
MENT: COMPLETE	APPROVED FOR	EXCHANGE RATE	DIFFERENCES		
PARTIAL	BY 2	= \$	= \$1.00		
FINAL	TITLE	Amount verified; correct for (Signature or initials)			
PROGRESS	I certify that this voucher is correct and proper for payment.				
ADVANCE					
(Date)		(Authorized Certifying Officer) 2		(Title)	
ACCOUNTING CLASSIFICATION					
CHECK NUMBER		ON TREASURER OF THE UNITED STATES		CHECK NUMBER	
ASH		DATE		ON (Name of bank)	
				PAYEE 3	
When stated in foreign currency, insert name of currency. the ability to certify and authority to approve are combined in one person, one signature only is necessary. herwise the approving officer will sign in the space provided, over his official title. hen a voucher is receipted in the name of a company or corporation, the name of the person writing the mpany or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe mpany, per John Smith, Secretary", or "Treasurer", as the case may be.				PER	
				TITLE	



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

March 3, 1975

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
Bureau of Mines
U.S. Department of the Interior
Washington, D.C. 20240

Reference: U.S. Bureau of Mines Contract Number H0232066
Georgia Tech Research Institute Project A-1555
Monthly Financial Letter 19
January 1 through January 31, 1975


Dear Mr. Brantley:

In accordance with Item 2.1 of our Contract, the following financial statement and attached graph are submitted.

Total January charges were twelve cents for xeroxing. You will note a change in the Personal Services which affects the total. This change results from transposing numbers under Personal Services in December.

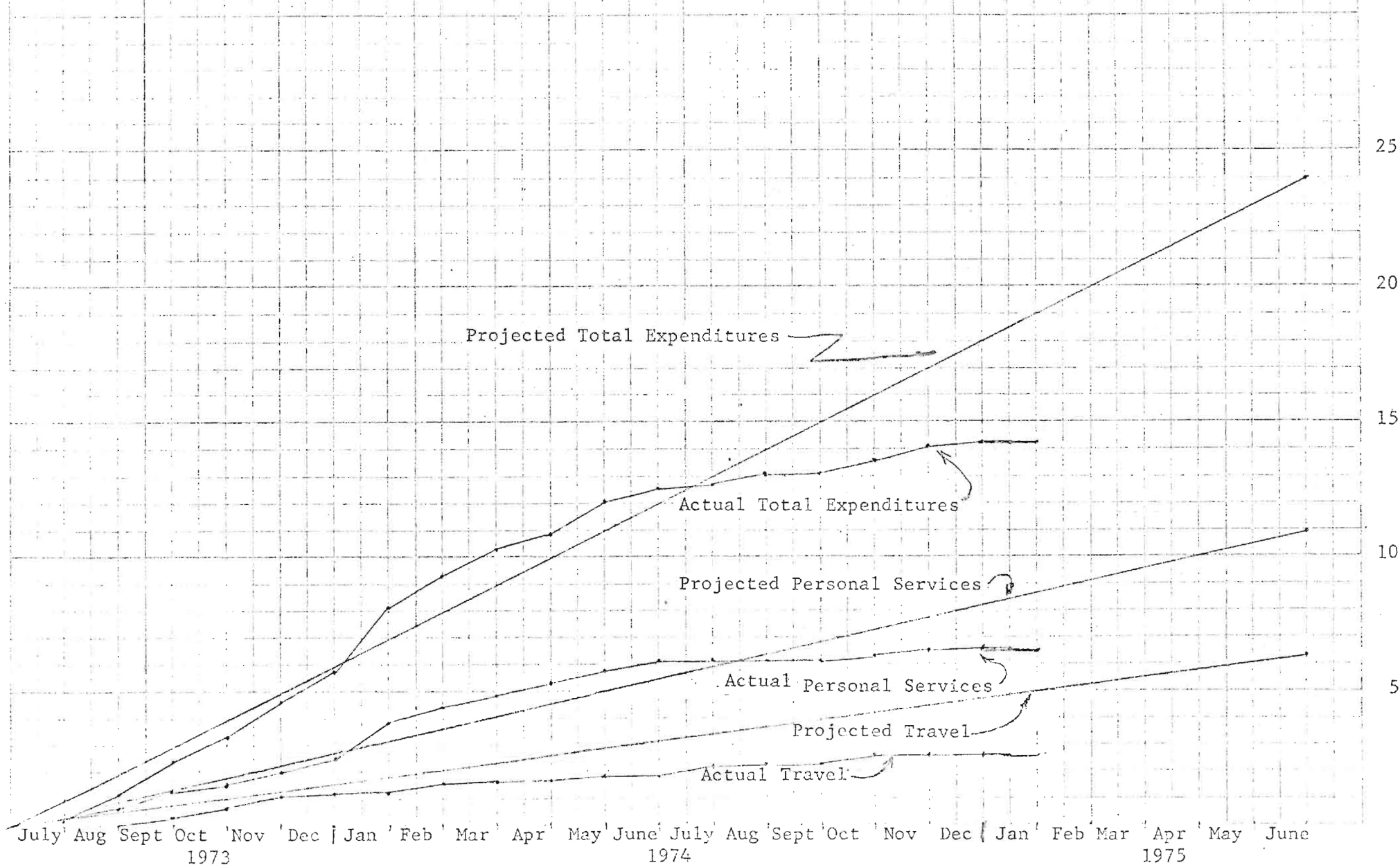
<u>ITEM</u>	<u>JANUARY, 1975</u>	<u>CUMULATIVE</u>
Personal Services	-	\$6,560.19
Retirement (8.77%)	-	558.87
Materials & Supplies	0.12	164.53
Travel	-	2,737.51
Overhead (65%)	-	4,264.13
	<u>0.12</u>	<u>\$14,285.23</u>

Sincerely yours,

 John E. Husted
Project Director

JEH:mar

Attachment



Contract: H0232066 Project A-1555

PUBLIC VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL

VOUCHER NO.

SCHEDULE NO. **19**

DEPARTMENT, BUREAU, OR ESTABLISHMENT AND LOCATION

**S. Bureau of Mines
ction of Contracts
ilding 20
ver Federal Center
ver, Colorado 80225**

DATE VOUCHER PREPARED

March 17, 1975

CONTRACT NUMBER AND DATE

H0232066 6/22/73

REQUISITION NUMBER AND DATE

PAID BY

PAYEE'S
NAME
AND
ADDRESS

**Georgia Tech Research Institute
Georgia Institute of Technology
Atlanta, Georgia 30332**

DATE INVOICE RECEIVED

DISCOUNT TERMS

PAYEE'S ACCOUNT NUMBER

A-1555

GOVERNMENT B/L NUMBER

Contract Amount: \$ 23, 989.00

DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)	CUMULATIVE AMOUNT	CURRENT AMOUNT
1/75	Salaries and Wages	\$ 6,867.81	\$ 307.62
28/75	Employee Retirement Benefits	558.87	-
presents a	Materials and Supplies	166.21	1.68
illing	Equipment	-	-
riod and	Travel	2,737.51	-
t Neces-	Computer	-	-
ily the	Overhead (65%)	4,464.08	199.95
me Charges	Sub Total	14,794.48	509.25
re Incurred.	Less Reserves Withheld	(2,219.17)	(76.39)
		12,575.31	432.86
	Cost Reimbursable		
	Provisional Payment	\$ 12,575.31	

Continuation sheet(s) if necessary

(Payee must NOT use the space below)

TOTAL

\$ 432.86

PAYMENT: COMPLETE	APPROVED FOR	EXCHANGE RATE	DIFFERENCES
PARTIAL	= \$	= \$1.00	
FINAL	BY ²		
PROGRESS	TITLE	Amount verified; correct for	
ADVANCE		(Signature or initials)	

I, in authority vested in me, certify that this voucher is correct and proper for payment.

(Date) (Authorized Certifying Officer) ² (Title)

ACCOUNTING CLASSIFICATION

CHECK NUMBER	ON TREASURER OF THE UNITED STATES	CHECK NUMBER	ON (Name of bank)
CASH	DATE	PAYEE ³	

When stated in foreign currency, insert name of currency.
If the ability to certify and authority to approve are combined in one person, one signature only is necessary.
Otherwise the approving officer will sign in the space provided, over his official title.
When a voucher is received in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary", or "Treasurer", as the case may be.

PER

TITLE



A-1555

ENGINEERING EXPERIMENT STATION
GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

March 13, 1975

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
Bureau of Mines
U.S. Department of the Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
MONTHLY FINANCIAL LETTER 20
FEBRUARY 1 through FEBRUARY 28, 1975

Dear Mr. Brantley:

In accordance with Item 2.1 of our Contract, the following financial statement and attached graph are submitted.

<u>Item</u>	<u>February, 1975</u>	<u>Cumulative</u>
Personal Services	\$307.62	\$6,867.81
Retirement (8.77%)	26.98	585.85
Materials & Supplies	1.68	166.21
Travel	--	2,737.51
Overhead (65%)	199.95	4,464.08
	<u>\$536.23</u>	<u>\$14,821.46</u>

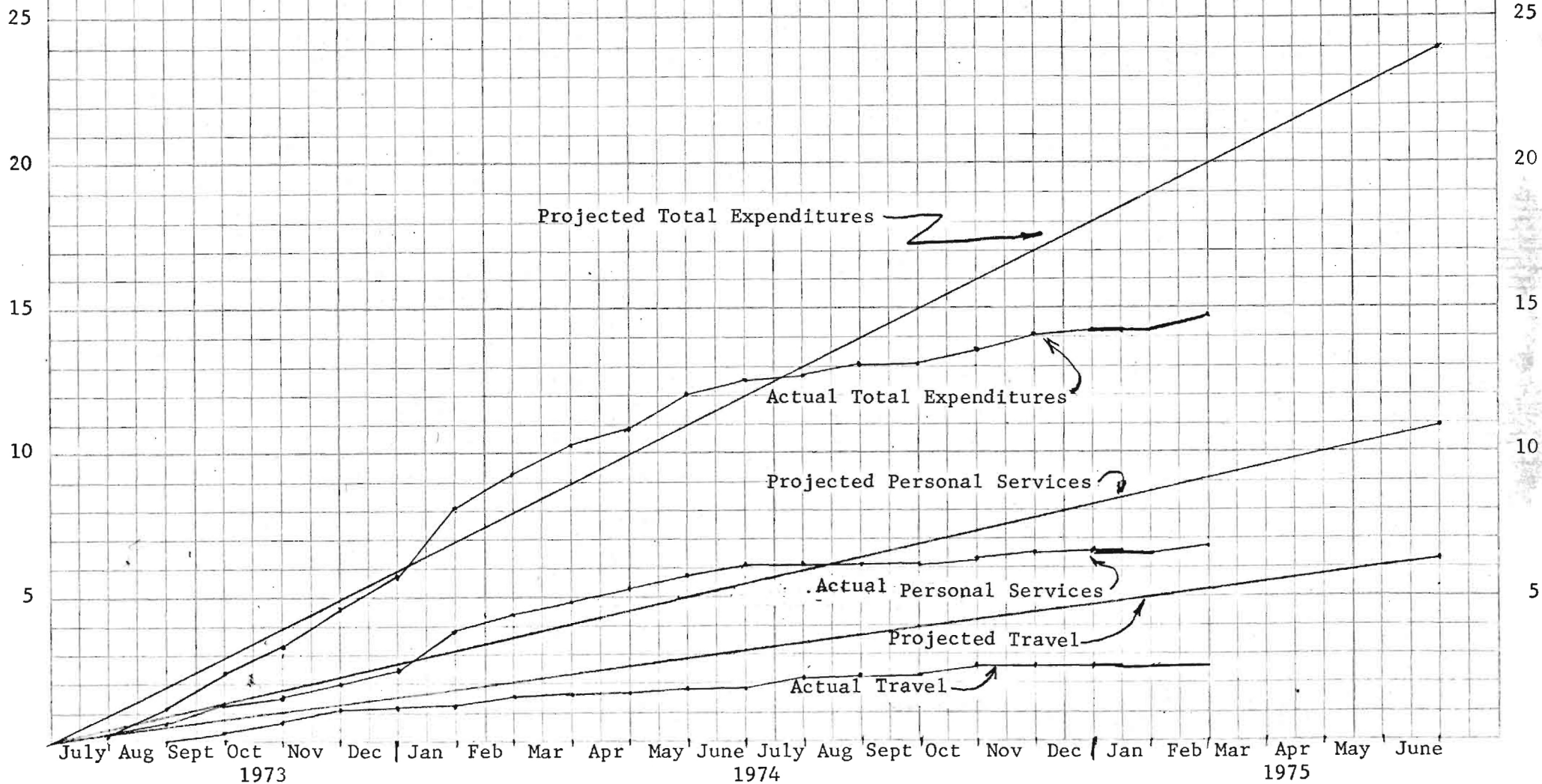
As you are aware, there was quite a mix-up by our Contract Office in requesting a no-cost extension until June 30, 1975. On the basis that the extension is being granted, plans are to apply approximately 50 percent of my time during the next quarter to complete the project. Funds appear adequate for completion.

Sincerely yours,

U
John E. Husted
Project Director

JEH:

Attachment



Contract: H0232066 Project A-1555

**PUBLIC VOUCHER FOR PURCHASES AND
SERVICES OTHER THAN PERSONAL**

VOUCHER NO.

20

DEPARTMENT, BUREAU, OR ESTABLISHMENT AND LOCATION

S. Bureau of Mines
Division of Contracts
Building 20
Over Federal Center
Denver, Colorado 80225

DATE VOUCHER PREPARED

April 11, 1975 Reissued 6/26/75

CONTRACT NUMBER AND DATE

HO232066 6/22/73

REQUISITION NUMBER AND DATE

SCHEDULE NO.

PAID BY

DATE INVOICE RECEIVED

DISCOUNT TERMS

PAYEE'S ACCOUNT NUMBER

A-1555
GOVERNMENT B/L NUMBER

PAYEE'S NAME AND ADDRESS
Georgia Tech Research Institute
Georgia Institute of Technology
Atlanta, Georgia 30332

Contract Amount: \$ 23,989.00

DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)	CUMULATIVE AMOUNT	CURRENT AMOUNT
1/75	Salaries and Wages	\$ 7,380.52	\$ 512.71
	Employee Retirement Benefits	585.85	26.98
11/75	Materials and Supplies	180.91	14.70
	Equipment	-	-
	Travel	2,737.51	-
	Computer	-	-
	Overhead (65%)	4,797.34	333.26
	Sub Total	15,682.13	887.65
	Less Reserves Withheld	(2,352.32)	(133.15)
		13,329.81	754.50
	Cost Reimbursable Provisional Payment	\$ 13,329.81	

Continuation sheet(s) if necessary (Payee must NOT use the space below) **TOTAL** \$ 754.50

APPROVED FOR	EXCHANGE RATE	DIFFERENCES
= \$	= \$1.00	
BY 2		
TITLE	Amount verified; correct for	
	(Signature or initials)	

In testimony whereof, I certify that this voucher is correct and proper for payment.

(Date) (Authorized Certifying Officer) 2 (Title)

ACCOUNTING CLASSIFICATION

CHECK NUMBER	ON TREASURER OF THE UNITED STATES	CHECK NUMBER	ON (Name of bank)
CASH	DATE	PAYEE 3	
When stated in foreign currency, insert name of currency.		PER	
The ability to certify and authority to approve are combined in one person, one signature only is necessary. Otherwise the approving officer will sign in the space provided, over his official title.		TITLE	
When a voucher is received in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary", or "Treasurer", as the case may be.			



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

April 10, 1975

Mr. F. E. Brantley
Office of Assistant Director,
Mineral Supply
Bureau of Mines
U.S. Department of the Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT A-1555
MONTHLY FINANCIAL LETTER 21
MARCH 1 THROUGH MARCH 31, 1975

Dear Mr. Brantley:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph are submitted.

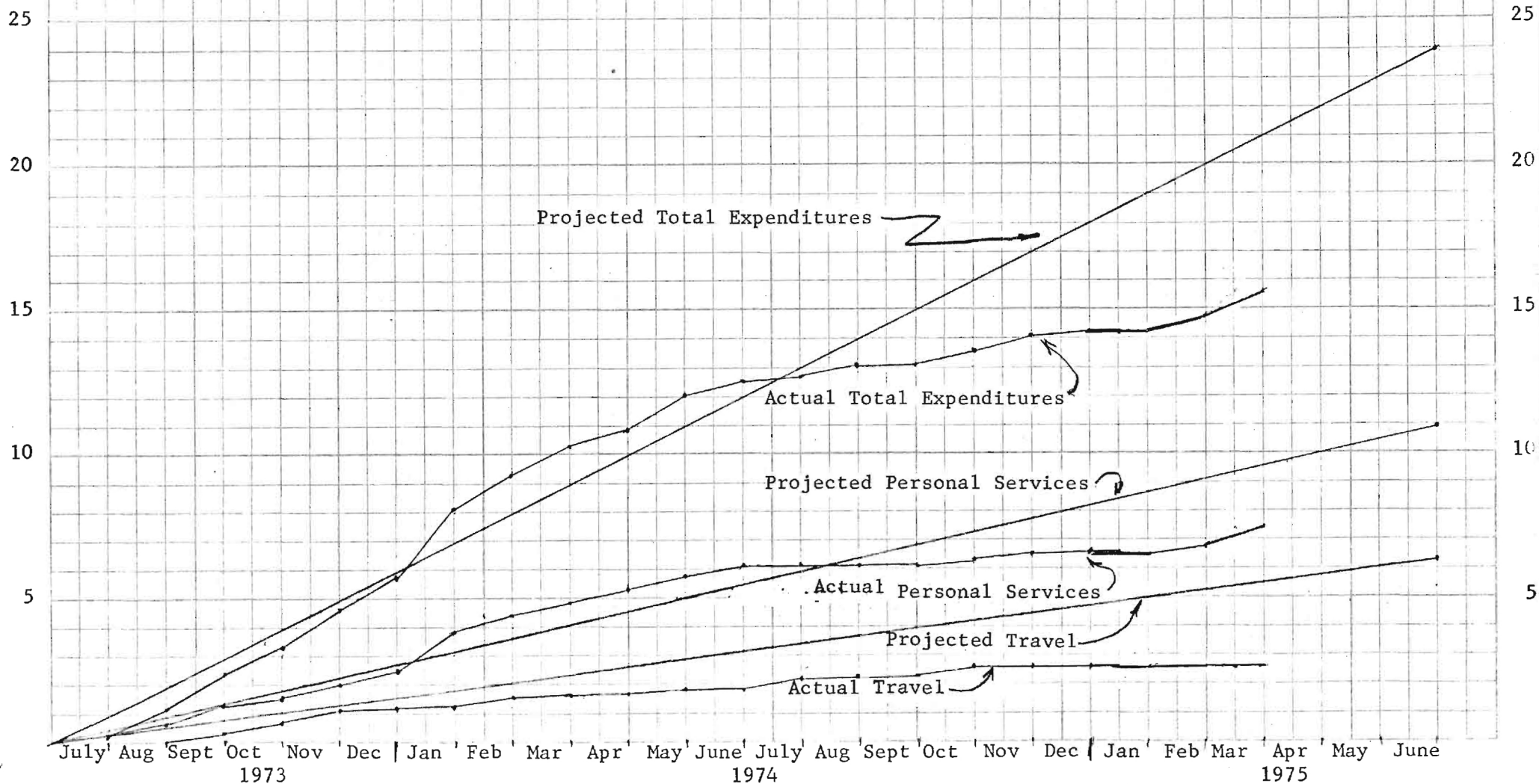
<u>Item</u>	<u>March, 1975</u>	<u>Cumulative</u>
Personal Services	\$512.71	\$7,380.52
Retirement (8.77%)	44.96	630.81
Materials & Supplies	14.70	180.91
Travel	-	2,737.51
Overhead (65%)	333.26	4,797.34
	<u>\$905.63</u>	<u>\$15,727.09</u>

Sincerely yours,

John E. Husted
Project Director

JEH:mar

Attachment



Contract: H0232066 Project A-1555

PUBLIC VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL

VOUCHER NO.

21

DEPARTMENT, BUREAU, OR ESTABLISHMENT AND LOCATION

Bureau of Mines
Division of Contracts
Building 20
Denver Federal Center
Denver, Colorado 80225

DATE VOUCHER PREPARED

Reissued

May 13, 1975 6/26/75

CONTRACT NUMBER AND DATE

110232066 6/22/73
REQUISITION NUMBER AND DATE

SCHEDULE NO.

PAID BY

DATE INVOICE RECEIVED

DISCOUNT TERMS

PAYEE'S ACCOUNT NUMBER

A-1555
GOVERNMENT B/L NUMBER

Georgia Tech Research Institute
Georgia Institute of Technology
Atlanta, Georgia 30332

Contract Amount: \$ 23,989.00

ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)	CUMULATIVE AMOUNT	CURRENT AMOUNT
Salaries and Wages	\$ 8,405.94	\$ 1,025.42
Employee Retirement Benefits	630.81	44.96
Materials and Supplies	198.92	18.01
Equipment	-	-
Travel	2,793.09	55.58
Computer	-	-
Overhead (65%)	5,463.86	666.52
Sub Total	17,492.62	1,810.49
Less Reserves Withheld	(2,623.89)	(271.57)
	14,868.73	1,538.92
Cost Reimbursable Provisional Payment	\$ 14,868.73	

(Payee must NOT use the space below) **TOTAL** \$ 1,538.92

APPROVED FOR	EXCHANGE RATE	DIFFERENCES
= \$	= \$1.00	
BY ²		
TITLE	Amount verified; correct for (Signature or initials)	

By authority vested in me, I certify that this voucher is correct and proper for payment.

(Date) (Authorized Certifying Officer) ² (Title)

ACCOUNTING CLASSIFICATION

NUMBER	ON TREASURER OF THE UNITED STATES	CHECK NUMBER	ON (Name of bank)
DATE		PAYEE ³	

If in foreign currency, insert name of currency.

Authority to certify and authority to approve are combined in one person, one signature only is necessary.
The approving officer will sign in the space provided, over his official title.
If the voucher is received in the name of a company or corporation, the name of the person writing the
corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe
Secretary John Smith, Secretary", or "Treasurer", as the case may be.

PER

TITLE

LIBRARY DOES NOT HAVE ;

Monthly Financial Letter No. **22**

A-1555



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

June 11, 1975

Mr. F. E. Brantley
Bureau of Mines
U.S. Department of the Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H-0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
MONTHLY FINANCIAL LETTER NUMBER 23
MAY 1 THROUGH MAY 31, 1975

Dear Mr. Brantley:

In accordance with Item 2.1 of our contract, the following financial statement and attached graph are submitted:

<u>ITEM</u>	<u>MAY, 1975</u>	<u>CUMULATIVE</u>
Personal Services	\$1,325.42	\$9,731.36
Retirement (8.77%)	116.24	836.98
Materials & Supplies	5.28	204.20
Travel	418.83	3,211.92
Overhead (65%)	861.52	6,325.38
	<u>\$2,727.29</u>	<u>\$20,309.84</u>

Sincerely yours,

U John E. Husted
Project Director

JEH:mar

Attachment

25

20

15

10

5

25

20

15

10

5

Projected Total Expenditures

Actual Total Expenditures

Projected Personal Services

Actual Personal Services

Projected Travel

Actual Travel

July '73 Aug '73 Sept '73 Oct '73 Nov '73 Dec '73 Jan '74 Feb '74 Mar '74 Apr '74 May '74 June '74 July '74 Aug '74 Sept '74 Oct '74 Nov '74 Dec '74 Jan '75 Feb '75 Mar '75 Apr '75 May '75 June '75

Contract: H0232066 Project A-1555

Standard Form 1034 7 GAO 5000 1034--114		PUBLIC VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL		VOUCHER NO. 23	
DEPARTMENT, BUREAU, OR ESTABLISHMENT AND LOCATION S. Bureau of Mines ction of Contracts ilding 20 nver Federal Center nver, Colorado 80225		DATE VOUCHER PREPARED July 14, 1975		SCHEDULE NO.	
		CONTRACT NUMBER AND DATE HO232066 6/22/73		PAID BY	
		REQUISITION NUMBER AND DATE			
PAYEE'S NAME AND ADDRESS Georgia Tech Research Institute Georgia Institute of Technology Atlanta, Georgia 30332		DATE INVOICE RECEIVED			
		DISCOUNT TERMS			
		PAYEE'S ACCOUNT NUMBER A-1555			
		GOVERNMENT B/L NUMBER			
Contract Amount: \$ 23, 989.00					

DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES <small>(Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)</small>	CUMULATIVE AMOUNT	CURRENT AMOUNT
1/75	Salaries and Wages	\$ 10,761.17	\$ 1,029.81
	Employee Retirement Benefits	810.67	89.93
30/75	Materials and Supplies	224.72	20.52
	Equipment	-	-
	Travel	3,229.41	17.49
	Computer	-	-
	Overhead (65%)	6,994.76	669.38
	Sub Total	22,020.73	1,827.13
	Less Reserves Withheld	(3,303.11)	(274.07)
		18,717.62	1,553.06
	Cost Reimbursable Provisional Payment	\$ 18,717.62	

Continuation sheet(s) if necessary		(Payee must NOT use the space below)		TOTAL		\$ 1,553.06
APPROVED FOR	EXCHANGE RATE	DIFFERENCES				
COMPLETE	= \$	= \$1.00				
PARTIAL	BY ²					
FINAL						
PROGRESS	TITLE	Amount verified; correct for				
ADVANCE			(Signature or initials)			

I, the undersigned, in authority vested in me, I certify that this voucher is correct and proper for payment.

(Date)	(Authorized Certifying Officer) ²	(Title)
--------	--	---------

ACCOUNTING CLASSIFICATION	

CHECK NUMBER	ON TREASURER OF THE UNITED STATES	CHECK NUMBER	ON (Name of bank)
CASH	DATE	PAYEE ³	

When stated in foreign currency, insert name of currency. The ability to certify and authority to approve are combined in one person, one signature only is necessary. Otherwise the approving officer will sign in the space provided, over his official title. When a voucher is receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe company, per John Smith, Secretary", or "Treasurer", as the case may be.		PER
		TITLE



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

October 12, 1973

Mr. James Paone
Office of Mineral Supply
U. S. Bureau of Mines
4015 Wilson Boulevard, Tower 3
Arlington, Virginia 22203

Reference: U. S. Bureau of Mines Contract Number H-0232066
Georgia Tech Research Institute Project No. A-1555
Quarterly Technical Letter Report No. 1
June 22 through September 30, 1973

Dear Mr. Paone:

In accordance with Section 2.2 of our contract, the following brief quarterly technical report is submitted.

A meeting was held in your office on July 30, 1973, at which time the decision was reached to place primary emphasis on equipment for the mining and beneficiation of coal, copper, iron, phosphate, and clay. Secondary recovery was not contemplated. Processes to be studied would include coal to shipment, copper to concentrates, iron to pelletizing, phosphate to concentration, and clay to calcination. A fundamental part of restricting the scope of commodities to be studied was the amount of available money and hence time. As budgeted, approximately 11 weeks are assigned to travel, data gathering, conferences, or interviews and monthly and quarterly reports, on an order of two weeks per commodity. Six to seven weeks were assigned to data review, tabulation and projection and final report completion.

Work in the subject quarter was approximately two man weeks. Work consisted of detailed project planning and attendance at meetings as shown below and as agreed to in advance.

The American Mining Congress's Annual Meeting in Denver, Colorado, September 9-12, and the Society of Mining Engineers' (AIME) Annual Meeting, September 19-21, were visited. Equipment manufacturers were interviewed and contacts made for future visits to both mining and equipment companies.

Reception to the program were excellent, and hence excellent cooperation is anticipated.

Sincerely yours,

✓ John E. Husted
Project Director

ct



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

January 9, 1974

Mr. James Paone
Office of Mineral Supply
4015 Wilson Boulevard
Tower Number 3
Arlington, Virginia 22203

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H-0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
QUARTERLY TECHNICAL REPORT NUMBER 2
OCTOBER 1 through DECEMBER 31, 1973

Dear Mr. Paone:

In accordance with Section 2.2 of our contract, the following brief quarterly technical report is submitted.

In addition to visits to your office, visits were made to the following:

1. The Montana Power Company, and their subsidiary the Western Energy Company, were visited in Butte, Montana. Excellent information was obtained from the Western Energy Company concerning equipment needed for a five-million-short-tons-per-year-operation in the Colstrip, Montana area.
2. Montana coal versus environmental interests was discussed with the Montana Geological Survey.
3. The strip coal mine of Western Energy Company located at Colstrip, Montana, was visited and photographed.
4. The Taconite area of northeastern Minnesota was visited and the following companies were contacted:
 - (a) U.S. Steel's Minntac plant at Mountain Iron, Minnesota. An entire day was spent here.

Contd./...

Mr. James Paone
Office of Mineral Supply

January 9, 1974

(Page 2)

- (b) Hannah Mining Company (National Steel Pellet Plant and Butler Taconite) at Hibbing, Minnesota.
 - (c) Eveleth Taconite Company at Eveleth, Minnesota.
 - (d) Reserve Mining Company at Babbitt, Minnesota.
5. A trip planned for December to Seattle, Washington, was cancelled because of illness.

Sincerely yours,

John E. Husted
Project Director

JEH:mar



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

April 10, 1974

Mr. F. E. Brantley
Office of Assistant Director,
Mineral Supply
U.S. Bureau of Mines
Interior Building
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H-0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
QUARTERLY TECHNICAL REPORT NUMBER 3
JANUARY 1, through MARCH 31, 1974

Dear Mr. Brantley:

Time on this project to stay within budgeted limits is approximately one week per month. Work on this project during the subject period included:

1. Visits to the phosphate areas of Florida.
2. Conferences with equipment representatives at A.I.M.E. meeting in Dallas, Texas.
3. Conferences in Washington with Bureau personnel and visit to American Mining Congress.
4. Planning for visit to copper areas of western United States.
5. Work on factors for equipment projections.

Sincerely yours,

U John E. Husted
Project Director

JEH:mar



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

July 15, 1974

Mr. F. E. Brantley
Office of the Assistant Director
Mineral Supply
Bureau of Mines
U.S. Department of the Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H-023066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
QUARTERLY TECHNICAL REPORT NUMBER 4
APRIL 1 through JUNE 30, 1974

Dear Mr. Brantley:

Under Items 1, 2, and 3 of the work program in the original proposal, information has been developed from mining companies as follows:

1. Coal

There have been almost revolutionary changes in the outlook for coal mining and concepts for coal usage in the energy needs of this Country since the planning and initiation of the study. Expansion plans for new mines directed toward making the United States self-sufficient for its energy requirements exceed by many-fold the new mine considerations that existed at the inception of the contracted study now in progress. Increased coal mine capacity is causing shortages in equipment which is made even worse by other shortages such as in fuel and steel. Steel shortages, in part, result from inadequate melting facilities which, in turn, result from insufficient fuel.

Other material shortages also have decreased current capacity for equipment manufacture; as an example, a decrease in companies that have the capability of large custom castings, custom heavy duty gear manufacture, etc. All of these factors have, and are, restricting the Nation's ability to manufacture sufficient equipment to expand coal production as rapidly as desired.

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Mr. F. E. Brantley
Bureau of Mines

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Additional steel and equipment shortages may be anticipated this year if certain industry predictions of decrease in coal production materialize. Two reasons have been given by industrial sources for an anticipated decline. Either, or both, may be correct: (1) maintenance that has been postponed is now required and the resulting "downtime" is reducing coal production, and/or (2) the miners are slowing down to prevent stockpiling in order to have more leverage in negotiations in a possible strike this coming fall.

Much of the information concerning equipment shortages was developed at the A.M.C. coal convention in Pittsburgh in early May. Additional information was obtained at the Lima Division of the Clarke Equipment Corporation. Clarke Equipment Corporation plans to produce two eight-yard capacity shovels per month for the coal industry. They have seven times as many requests as they are able to deliver. Critical items are casting availability and machining capacity, particularly six-inch and above boring capacity, both vertical and horizontal. They have had to purchase boring equipment from Czechoslovakia (1975 delivery).

Work on the project in coming months will be with equipment manufacturers and some major eastern mining companies.

For coal strip mining in Montana, information had been developed for a mining operation with 5,000,000 annual tons of capacity. This information was obtained, in confidence, from a Western Energy Company's engineering study for a new mine. Longevity and replacement rates were also obtained. Based on this, and similar information, we should be able to extrapolate and project the equipment needed to mine the Western coal reserves. The rate of contemplated expansion of mining capacity of the Western Energy Company through the year 2000 with expected production rates at each level of planned expansion was also obtained.

2. Iron Ore

The visit to the new Minntac pellet from the taconite operation of U.S. Steel revealed the following information: on the basis of an annual capacity of 12,500,000 short tons of pellets, the numbers of pieces of equipment for specific operations, the average operating life of this equipment, and individual equipment capacity were obtained. Equipment manufacturers were also identified. Information on equipment usage was carried from overburden stripping and ore drilling through to pellet production. A percentage breakdown costs

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Mr. F. E. Brantley
Bureau of Mines

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allocation for their crusher site was given, showing 39.5 percent of costs to be for equipment versus other site and facility costs assigned to the crushing facilities.

Hanna Mining Company stated that hematite ore would be depleted for the Range, as a whole, in approximately ten years and, consequently, new equipment to be purchased for this purpose would be limited.

Operating equipment for hematite mining was listed with hour-life estimated by varying capacities and types of equipment.

Eveleth Taconite Company (a division of the Ford Motor Company) gave information concerning drilling, crushing, and ore transportation equipment for their 2,000,000 million tons of annual capacity of pellets.

Reserve Mining Company gave information concerning their mining operation at Babbitt. Because of environmental litigation in court, they would not discuss their Silver Bay processing operation.

In summary, data from four mining operations, with two each at two separate levels of production, namely, in the two million ton and in the 10-12 million ton capacity range, were obtained for the Mesabi area.

Planned, is a visit to Pickand-Mather concerning their projected new Minnesota operation plans and Inland Steel Corporation concerning their Wisconsin plant.

3. Phosphate

It is anticipated by Florida phosphate producing companies that reserves of grades of phosphate currently being mined in central Florida, will be exhausted between the years 2000 and 2010, if present trends continue. On this basis, the next round of major capital equipment expenditures for expansion will probably be the last, and take place before 1982 with peak phosphate production between 1978 and 1980.

Information was obtained concerning key equipment for an annual capacity of mines between 2.5 to 3.5 million tons of product. Equipment balances, i.e. support equipment in terms of tractors, scrapers, etc. required to support say, 15 million yards per year of dragline capacity, were furnished by companies visited. The information for this will be used to project equipment needs. Visits to North Carolina and Tennessee are planned.

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Mr. F. E. Brantley
Bureau of Mines

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4. Copper

A visit to the Phoenix-Tuscon areas to secure information from Anaconda and other copper mining companies is planned. Previously planned trips were cancelled until more stability is present than existed during the winter gasoline shortage. A trip to Copper Hill, Tennessee, is also contemplated.

5. Clay

Projections of operating equipment requirements in the kaolin belt of Georgia are to be examined in terms of clays used as an ore of aluminum. This work is in progress.

6. Equipment Manufacturers

Visits to manufacturers of equipment were started, as shown under "Coal", in June, 1974, beginning with a manufacturer of shovels and similar equipment at Lima, Ohio. Manufacturers in Marion, Columbus, and Cincinnati are scheduled for visits in August. Other areas to be visited where equipment manufacturers are concentrated will be the Peoria, Illinois area and the Milwaukee, Wisconsin area.

Sincerely yours.

✓ John E. Husted
Project Director

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File: A-1555



ENGINEERING EXPERIMENT STATION
GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

October 14, 1974

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
Bureau of Mines
Department of Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H-0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
QUARTERLY TECHNICAL REPORT NUMBER 5
JULY 1 through SEPTEMBER 30, 1974

Dear Mr. Brantley:

Very little work was done during the subject period in order to concentrate on the completion of S0122100 in accordance with time stipulations received the first week of August, 1974.

Sincerely,

John E. Husted
Project Director

JEH:mar



ENGINEERING EXPERIMENT STATION

GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

March 3, 1975

Mr. F. E. Brantley
Office of Assistant Director, Mineral Supply
Bureau of Mines
U.S. Department of the Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
QUARTERLY TECHNICAL REPORT NUMBER 6
OCTOBER 1 through DECEMBER 31, 1974

Dear Mr. Brantley:

First, let me review events of this fiscal year.

Quarterly Technical Report Number 4, dated July 15, 1974, stated in some detail the work accomplished and the work planned. Subsequently, during the first week in August, a directive was received from the Office of University Affairs to complete Contract Number S0122100 as rapidly as possible. Consequently, 100 percent of my time during August and September was expended on Contract S0122100. July time was charged 100 percent to the State of Georgia's aluminum project and, therefore, during the first quarter of this fiscal year, none of my time was charged to H0232066. Some work was done, such as writing the quarterly report and contacting sources of information, but this work was on my own time and, as stated above, not charged to the project as Quarterly Report Number 5 indicated.

During the quarter October through December, 1974, to which this report is addressed, a total of approximately four working days was expended on the project. This was due to the completion of the "Alumina from Kaolin" report for the State of Georgia, major time spent on S0122100 per directive, illness, and one-fourth of my time assigned to academic activities. This schedule was reported to you, verbally, in December.

Despite this small amount of time, I think there were considerable accomplishments in that I attended the equipment show of the American Mining Congress and was able to secure good information for the project in terms of support of conclusions drawn from previous work. A number of contacts also was made with mining equipment manufacturers.

Contd./...

March 3, 1975

Expansion of facilities at Marion, Ohio, by Marion Power Shovel Company and the purchase by Bucyrus-Erie Company of the U.S. Navy ordinance plant in Idaho are giving much-needed, greater capacity to the manufacture of large, dragline and shovels. Whereas a five-year leadtime was required in ordering a large dragline, this time has now been cut to four years--and still less time is anticipated as more capacity becomes available.

It was found that with the large equipment manufacturers, capital was not as much a problem as manpower availability, steel availability, custom large casting, and custom large-scale gear cutting.

Because of the "feast or famine" nature of mining in the past, it was found that custom manufacturers of parts for mining equipment have not been able to spare the time, space, or manpower during the "feast" time and did not have the funds during "famine" times to upgrade their facilities. As a result, such plants are generally operating with obsolete equipment that increases maintenance costs, raises environmental questions, and probably will lead to the demise of most custom operations in the relatively near, foreseeable future, say five years hence.


Some steel producers are reported as facing the same problems of obsolescence and related high operating costs.

Because this report is late, time will be devoted to the plans for the remainder of the project, scheduled to be completed by June 30, 1975. During the current quarter, 75 percent time is assigned to the School of Chemical Engineering and 25 percent time to the Engineering Experiment Station, where Contract H0232066 is administered. A graduate student in economics has been added to the project to assist in codifying data and in projections based on the data. The graduate student is expected to work on the project next quarter also.

Work will be devoted to completing data on copper mining requirements and large, earth-moving equipment such as produced by Wabco and Caterpillar Tractor Company. Wabco has promised to assist in detail projections for their equipment and capital needs; similar information is anticipated for other companies.

Time allotments are as follows: none in January, 15 percent in February, a projected 25 percent in March, and approximately half time during the last quarter. The scheduled time provides for completing the report by the extended completion date of June 30, 1975.

Sincerely,

 John E. Husted
Project Director

A-1555



ENGINEERING EXPERIMENT STATION
GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

April 11, 1975

Mr. F. E. Brantley
Office of Assistant Director
Bureau of Mines
U.S. Department of the Interior
Washington, D.C. 20240

Reference: U.S. BUREAU OF MINES CONTRACT NUMBER H-0232066
GEORGIA TECH RESEARCH INSTITUTE PROJECT NUMBER A-1555
QUARTERLY TECHNICAL REPORT NUMBER 7
JANUARY 1 THROUGH MARCH 31, 1975

Dear Mr. Brantley:

Quarterly Technical Report Number 6, dated March 3, 1975, was filed late; it included summary data to that date as well as projected work.

Work was as projected for March for myself. The graduate student assistant did not spend much time because of examinations and the quarterly "break." All in all, less than two weeks' total time was expended by me during the quarter. Much of this time was spent in "educating" the assistant and in organization and planning for the remainder of the project. A trip was made to Washington. Part of this trip was to talk with Mr. P. F. Yopes concerning this project.

As you are aware, it was discovered early in February that our contract office had not properly requested the time extension for the project. It is my understanding that this situation has been corrected and a no-cost extension to the end of June this year has been approved.

Sincerely yours,

John E. Husted
Project Director

JEH:mar